My Hundred Swiss Flowers

Mary A. Pratten

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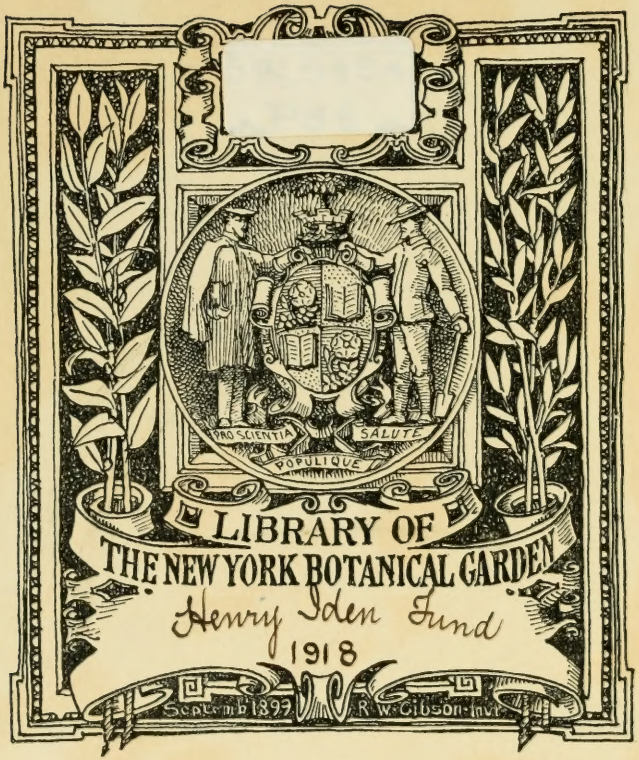

MY

Hundred Swiss Flowers,

WITH

A SHORT ACCOUNT OF

SWISS FERNS.

BY

MARY A. PRATTEN.

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NEW YORK
BOTANICAL
GARDEN

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MY

HUNDRED SWISS FLOWERS.

INTRODUCTORY.

Nature never did betray
The heart that loved her. 'Tis her privilege,
Through all the years of this our life to lead
From joy to joy.

Wordsworth.

Among the various attractions of Switzerland that of its flowers is not the least. Even those who care for little but peaks, cols, and glaciers, whose preparations consist in trying their rope and sharpening their ice-axe before starting for the mountains, can scarcely fail to be struck with the vivid patches of colour which they will find above the highest range of tree-life. There one may see those brilliant masses of small flowers which, thanks to the protecting snow of past months, present a triumphant contrast to the pines, whose broken, bleached branches show how

fierce and unequal has been their battle with the winter storms.

But, if no one can pay a visit to Switzerland without being struck by the novelty and brilliancy of its plants, what must be the delight of first seeing them to a lover of those plants as he beholds on every hand a new world open to him? The pleasure will be two-fold. On the lower grounds he will find species with which he has been familiar in English gardens—no doubtful natives escaped from cultivation, but growing with the wildness, freedom, and abundance that proclaim them to be in their own land; he will be struck with admiration at seeing how beautiful the plant may become which he only knew before under a mean and stunted form; and, as he looks and admires, he may rejoice in the type and example which the lowly flower presents of the capability of improvement and progress in his own nature when placed under favouring circumstances. And then, higher up, he will meet in free profusion with many plants altogether new to him, and be equally astonished and delighted with the intense and varied colouring which is found in patches among the bare rocks.

Of course, good botanists have only to enjoy themselves in the midst of such treasures, and they can make their way somehow through Latin, German, and French books, and find great help from them in identifying their new

discoveries. But those with little knowledge of botany will inquire in vain for some English book, at a moderate price, that will enable them to name Swiss plants and assist in the search for them. So far as appears, Mr. Wood's *Tourist's Flora* is the only English one which in any way professes to do this; and, as he includes the greater part of the continent, his book, though very valuable in many respects, is more expensive, more condensed, and less simple than beginners require. There will, no doubt, be before long a volume which will contain the whole of the Swiss plants, in the convenient form which is afforded to the student of English Botany by so many of the Floras of our own country.* Meanwhile, the following unpretending pages are offered as an introduction to those who wish to know the names of the various plants they may have gathered on their Swiss journey and a little about them.

The hundred selected—though necessarily very many are left out—include those most remarkable, most charac-

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* Since these pages have been in the publisher's hands a book of this kind has been published by Messrs. Swan & Sonnenschein, which will probably be found very useful to those who wish to pursue their botanical studies of Alpine plants. New Swiss Floras in French are often making their appearance. One by Dr. Louis Bouvier, published about eight years ago at Geneva, will be found helpful. There is also a handsome translation of Sebotte by Bennet, consisting of four vols. with plates, published at £5.

teristic of the country, or most commonly seen, a great many of which will certainly be new to such as make a first visit to the Alps. To any who are in this happy position, and who ask where the treasures are to be found, the difficulty is rather to say where they are not than where they are. A walk over any of even the most frequented and most accessible heights will show them what they never saw before, that is if it is made in the right season. The reign of the plants is as short as it is glorious. Speaking generally, July is the month for them, or July and the first week in August, especially for those on the higher ground. Much that is lovely may be found on the Jura a fortnight or even a month earlier. It is true, some plants show themselves sooner, and many linger on later, or appear still on the heights when they have passed from the lower grounds; but, for ensuring abundance and variety, no time is like that above mentioned. Later on, the grass is mown on the Alpine slopes, or the cattle are sent to feed there; or the sun itself which called forth the beauty withers the flower, "and the grace of the fashion of it perisheth."

The blossom of the fruit-trees and the bulbous plants which abound in the neighbourhood of the lakes and on the lower grounds is earlier, and is said to be of rare beauty by those who have seen it. Fields of Crocuses, Narcissuses, Corydales, &c., abound. Usually, however, it is later in

the year that a visit is paid to Switzerland, and, where the stay is limited to a day or two in some one place, the state of the weather may sweep away all that was hoped for in the way of flowers. The pasture may have been blooming, the hill-side may have been a mass of blossoms, a day or two before; but a short spell of rain—snow in the high regions—comes, and all is changed. The sun may shine out again; but it will not bring back the flowers that have disappeared, even if they do not lie in little heaps—which is literally the case with the abundant butterflies of the Engadine.

There are so few of the higher mountains without their collections of plants that it is, perhaps, invidious to single out any in particular. In this respect, as in regard to Swiss travelling generally, those who have but a short time to spare would do wisely to confine themselves to one or two districts rather than run hurriedly over a large extent of ground. The top of the Furca Pass, the higher part of the Saas valley, the Rhône glacier, Gryon (above Bex), St. Bernard (especially for Violas), Zermatt, and the Riffel, may be mentioned as good centres, and as places having hotels, where the commoner Alpine flowers may be found almost at the very doors, while those that are rarer will scarcely fail to reward a longer search. There is probably no place better than the last mentioned for finding rare plants within a moderate distance. One or

two guides, also, at Zermatt, profess some knowledge of botany and have good dried specimens. The Jura has flowers peculiar to itself, and the Engadine, Pontresina, and Davos-Platz, likewise furnish capital centres, with rare flowers in abundance. The Engadine pastures are a mass of flowers.

As an example of what may be done without any search, but merely by gathering what comes in the way, we will give the remembrance of a walk up Pilatus one early day in July, and will say, in passing, that this grand old mountain, with its cap of cloud, possesses a fine flora in addition to its other attractions. We simply put down from memory a few flowers which were gathered on that occasion; had all those found within about ten yards from the road been added, the number could easily have been doubled or trebled.

The pleasant hostess at the comfortable little inn of Hergiswyl thought it doubtful whether we could get a horse up to the top of the mountain, on account of the snow; but she said the path was a good one, made by some of her family, and that at the Klimsenhorn we should find an inn kept by a relative. So there was nothing formidable in the nine or ten miles' ascent, except the length of the way to those who did not profess to be good walkers. Switzerland's finest lake never looked finer than early on that July morning, and the

way did not seem long to the little halting-place of Brünneli. The fields and orchards past, the more distinctly pasture and park-like lands began to abound with flowers. Sweet Orchises and a blue Phyteuma or Rampion, with a multitude of others, mixed with the tall grass, and the yellow Foxglove showed itself here and there. In respect of the Foxglove, England exceeds Switzerland; for the purple Digitalis, one of our handsomest British plants, is not properly wild there. This yellow kind is, of course, a novelty; but it is large to dry, and not pretty. Much the same may be said of the blue and the yellowish Monkshood, Aconitum. The Trollius, the old Globe Ranunculus, does not dry much better, but it is a pretty flower. We gathered all of these, and, as the sun was beginning to grow hot, we welcomed the shade of the tall pine wood, whose mossy banks contained new treasures. Among them was the curious but not pleasing blossom of Paris quadrifolia, Herb Paris, or True-love, rising from its four Greek-cross-like leaves, and the pretty Pyrola rotundifolia, the round-leaved Winter-Green, not very common in England; the still rarer one-flowered Pyrola, with its single squarish flower instead of the chime of bells possessed by many of the species, and which gives them, when in bud, rather the look of the Lily of the Valley. Not far off was the two-flowered Violet, its shape making it impossible to mistake

the family, while its small bright yellow flower with a few dark lines, the flowers being generally in pairs, distinguishes it from its fellows.

Soon, however, the words "Come on!" were heard—words which a botanist in Switzerland is likely to hear pretty often if he travels with those not like-minded with himself: for the usual pace of guides, horses, or mules leaves little time for grubbing about. In obedience to this command the friendly shade was quickly left, and soon the road became wilder; boulders and crags bounded the path; the Ranunculus aconitifolius on its tall stems gave place to the lower-growing R. Alpestris, which formed masses of blossom in small compact tufts, and told us by its presence that we were fast leaving the lower regions.

Soon, in a cleft of a rock, we discovered the dark green leaves and bright blossoms of Switzerland's own flower, Rhododendron ferrugineum, the Alpen-rose. Though seen by one of us for the first time, it was eagerly welcomed by all, including our youthful guide, who proudly stuck a piece in his cap. The way became steeper, the sun hotter, the feet more weary: but the distant views were clear and lovely, and the cliffs began to be more and more mountain-like. How were we ever to get up them? we thought. And then came the snow, and with the snow the beautiful Soldanella, one of the truest Alpine plants, its lovely fringed bells, two

or three together, rising on pink stalks from its pretty rounded leaves.

We were now in the middle of the Alpines. Had there been any doubt, the purple and orange Linaria Alpina, the deep blue Gentiana acaulis, with the smaller, brighter, white-valved G. verna, would have settled the question. We seized on the only specimen that came before us of Primula auricula, and gathered many a root of the thick-leaved, sweet-smelling purple Thlaspi rotundifolium.

The large trees had long been passed; and then came snow which was too deep for the horse, or at least for his rider. So, making our way through it as best we could, we pressed on towards the Klimsenhorn and the little church standing near it, and thankfully found ourselves on the bench by the former. The hotel was large, but empty, as we were almost the first visitors of the season; but so bright was the day, so pleasant the prospect all around, and so tempting the idea of roaming further on the mountain, that we decided we must spend the night up there; and, quickly sending down our messenger to make the necessary arrangements below, we hastened to feast our eyes on the magnificent view, as we rested on the turf carpeted with flowers, the moss-like Silene acaulis covered with its pink blossoms, and the turquoise-like Forget-me-not, being added to some we had already met with in our ascent.

Our hostess excited us by showing some Narcissus

poeticus, to be found within reach, she said, but nearly over. Whether we might have been successful in the search, or what else we might have discovered, it is impossible to say; for, alas! when we set off in the afternoon to reach the heights yet above us, the treacherous mountain put on his cap, and we were in a fog so thick that the only wise course was to retreat to the hotel, where we learnt how raw and cold the top of a mountain can be, when, in the month of July, there is more than an agreeable heat at its foot. Nor did we lose the fog till, on the following morning, the higher part of the mountain was passed in our descent, when we were again surrounded with perfect summer. This was the more to be regretted, as several quite rare plants are said to be found below the point of the Esel, among them the yellow Alpine Poppy, Androsace chamœjasme, and the purple Petrocollis Pyrenaica.

This seems a not unsuitable place to make a few remarks on dried plants, which are as much a characteristic of Switzerland as the honey which is made from the living flower, and that should be seen on every breakfast-table. We have lived to consider these plants as but poor mummies of what they once were; but there was a time when the sight of them would have roused almost ecstatic feelings. No doubt they bring back very powerfully in after years the scenes and places where they grew, while as a help in studying botany they are invaluable. A friend, the late

Miss M. I. Harris, has well expressed some of the associations connected with them :

> Treasures, I love ye ! though your bloom
> Has fled with your odour and rich perfume ;
> Though delicate tints no more appear,
> But, your gay guise doff'd, ye are pale and sear,
> Yet to mine eye ye will oft bring back
> The woodland dell or the mountain-track,
> Each hedge-row wild, or beech-crowned hill,
> The winding valley or murmuring rill,
> And ye shall be memory's fairy keys,
> Unlocking her treasured stores at ease ;
> And, though your own colours are lost for aye,
> Those from memory's land shall be bright and gay.
> So your magical skill in wintry hours
> Shall enliven my landscape, gathered flowers.

For preserving plants, there are some useful directions in Mr. Bentham's *British Flora*. Much is often said about the apparatus necessary for drying them—a great deal too much. Two boards with a couple of stout straps, and some sheets of paper (blotting or prepared paper is, perhaps, the best), and a tin case to put plants in, will be sufficient for most people. Those who intend to make a business of it may, perhaps, add a small press. But, after all, many of the best specimens will be those gathered by the way, and at once placed in some old book put in the pocket for the purpose ; if with a strap round it, so much the better. Any traveller could carry this anywhere, even as high as places where Mr. Whymper tells us he has found plants, at about

13,000 feet. Many a plant thus put in fresh would stand as good a chance as one carefully brought down in a case and spread out according to rule.

In saying this, we do not refer to persons who have ample time and means at their disposal; we rather give a hint to the many who have much to do in little time, and who, like a friend of ours, will be apt to find themselves nodding in the very act of attempting to arrange a fine collection after a long day's walk. Any who stay some time in a good centre for plants—ladies especially—may find it answer well to take more pains with their collection. One secret of having a good one will be to dry a great many specimens, out of which two or three may turn out very well. Even the inferior ones will be much improved by being nicely mounted, and may often be very useful for study; they, therefore, should not be hastily thrown away. If known to have any zeal in making such collections, travellers will frequently receive kindly sympathy and help from their fellow-travellers, the mountain-climbers, who, when they reach the limit of vegetation, will often gather some of the highest blossoms for those collecting below.

Remembering the way in which some of the plants grow, apparently almost within reach, but yet in reality where it is necessary to take some very dangerous footsteps in order to get at them, it may be well to suggest that, in collecting

flowers on the mountains, great caution should be observed; for there is often as much danger in getting them as in ascending the highest peaks of the Alps. They sometimes seem to grow so near the path that the attempt to get them is almost irresistible; but this little way may prove to end in awkward dangerous places, while those reaching after them have none of the precautions for safety which the rope, the guide, or the company of two or three, give to the mountaineer. It does not need an avalanche or a fall of a thousand feet to produce a fatal accident.

It will be very natural, under the influence of such books as Mr. Robinson's charming *Alpine Flowers for English Gardens*—a book which does not confine itself to Swiss-Alpine—to attempt to transplant some of the Swiss plants. The attempt may so far succeed that many may reach England alive, and some may live on for years; it will, however, probably be the exception for the most striking and characteristic of them, thus transplanted, to do well here long. Those from the higher mountains seem to need the intensity of their own climate, in its snow, cold, heat and moisture.

Many of the Stonecrops, Houseleeks, and Saxifrages are good travellers. Only let us put in a word against reckless grubbing-up, especially of the rarer species; for the flowers of Switzerland, like the coal-fields of England, are not inexhaustible. It is possible that success might be attained by

raising from seed, and thus those who arrive after the blossom is over would not be without some compensation.

Another advantage, too, which Switzerland affords to later visitors is found in the beauty of its Lichens, which may be met with then in full perfection and in great variety. This branch of botany is comparatively neglected, yet in no other are the specimens so easily preserved. Some look almost as well years after they were gathered as at first, others will revive in water. The limits of the present volume do not allow of any attempt to introduce them, but they are well worth study. One may be referred to, in passing, which looks just as though dabs of red ruddle had been put on the stone by an idle boy. It has the scent of Violets. It may be seen, among other places, on the road between Amsteg and Andermatt.

Everyone seems to associate ferns with Switzerland, and, in consequence of this, many may be surprised to be told that there are but few species there which are unknown in England. It is necessary to cross the Alps to find new species. Even the Maidenhair is rarely met with to the north of the Alps—a perfect contrast to the way in which it clothes the buildings of the old Italian cities, and flourishes in the clefts of the rocks along the Mediterranean. But, if few new varieties are found, there is an abundance of those which are not common with us. The Oak, with its slender divided stems; the Beech, with its

two turned-down leaflets; the Parsley, its fertile and barren fronds rising from the same root; the Holly, with its prickly leaves; and the delicate Bladder-fern, abound. For the sake of the many who are interested in them, a list, with a short description of each, is added at the end of the volume.

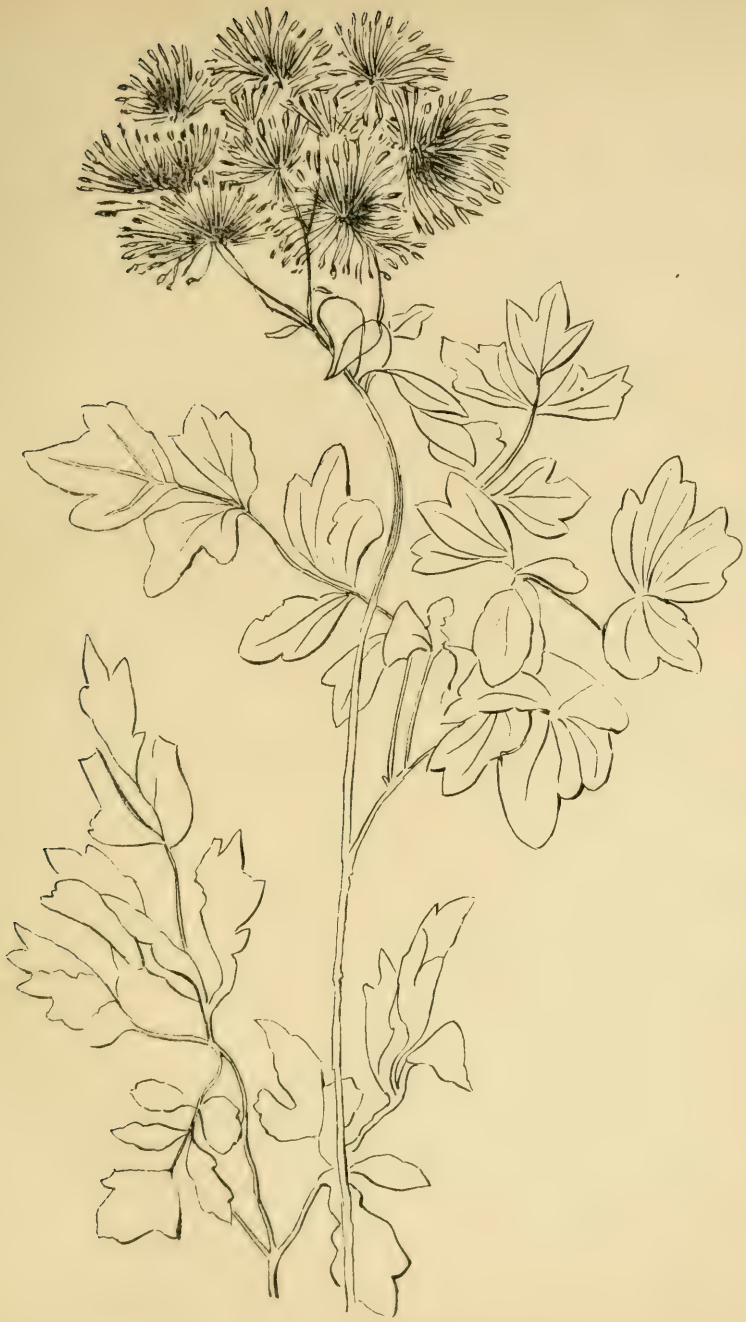
Few pursuits can do more than natural history in the way of beneficially occupying the mind, and giving it an object which has power to interest and soothe, amid all the perplexing and often lowering cares of life. It is not always that that which diverts or relieves the mind leaves nothing but a pure and elevating influence behind; yet such is the case with the study of the works of nature; and, in particular, the special branch before us, in the land of the great mountains, is fitted to teach one most important lesson. There it is impossible for a person at all thoughtful not to feel sometimes almost weighed down with a sense of the power and greatness all around, before which he is as nothing. And with the realisation of littleness comes the feeling of being no more to the One who formed the mighty mountains than the withered leaf to the blast which drives it and thousands of its fellows in its headlong fury. Something like the flowers, the gem-like Forget-me-not, the blue Gentian, the tiny pink nestling Campion, is needed to speak of a Being, part of Whose greatness consists in being able to descend to the most minute, apart from individual trust

in Whom there can be no trust at all, and, as they invite this trust,

> To whisper hope,
> Whene'er man's faith is dim,
> That He who careth for the flowers
> Will much more care for him.

The plants are arranged in their natural order, but a Linnæan index is added at the end, and pains have been taken to give the localities where the different plants may be found. There is a very good Museum at Geneva, connected with the Botanical Garden, where may be seen noted collections of dried plants. It is open to visitors two or three times a week, and any specimens would be named and much information given by the attendants.

Best thanks are due to Mr. O. Corder, of Norwich, for kindly looking over these sheets as they went through the the press.



1. *Thalictrum flavum* ....MEADOW-RUE.

MY

HUNDRED SWISS FLOWERS.

with a Slight Notice of Swiss Ferns.

1. Thalictrum.—Meadow Rue.*

(*PLATE I.*)

"So we *do* find the Maiden-hair on this side of the Alps," said I to a friend who was with me searching for flowers in the Zermatt valley; and we proceeded to dig up some pretty little plants which promised to be just the size for packing up and a journey to England. Alas for our hasty conclusion, or want of botanical knowledge! on further examination, when these plants were turned out of the tin on reaching the hotel, they proved to be young specimens of Thalictrum minus, the foliage and growth of

* The English names given are to be considered as only approximate, and, sometimes, as referring to the family rather than the individual. The particular species is often not known in England.

which have very much the appearance of the well-known Maiden-hair, Adiantum cuneatum. Its flowers are yellowish and insignificant, and the plant grows from one to two feet in height. But it is not this Thalictrum that will probably first attract attention in Switzerland. There are many species rather difficult to distinguish from each other, and perhaps some are mere varieties; but the family may be recognised by the much-divided, often ternate, or twice ternate leaves, with wedge-shaped leaflets. The flowers, too, cannot be mistaken; the sepals, like petals, and formerly so called, are insignificant, and soon fall off, making the flowers, which grow in panicles, or clusters, seem as though they consisted of a mass of stamens, the large anthers of which, numerous in each blossom, give the appearance of a purple, white, or yellowish tuft, as the case may be. T. Aquiligifolium is perhaps the most striking; purplish-blue in colour, two or three feet high, with leaves very much like those of the common Columbine. It is often met with among high mountainous woods and pastures, and is frequently cultivated in England, in old-fashioned gardens. Our plant, T. flavum (Fig. 1), is about two feet high, with yellowish flowers in a corymbose panicle; stem furrowed, the plant very leafy, leaves twice pinnate, leaflets often turned back at the edge. Very common in damp meadows. Its leaves dry well, and also its flowers.

2. *Aquilegia Alpina* .....ALPINE COLUMBINE.

2. Aquilegia.

(*PLATE II.*)

The common Columbine, A. vulgaris, is known to everyone, and, from the resemblance it bears to its more homely neighbour, there is no danger of mistaking A. Alpina (Fig. 2). The peculiarity of its shape, too, at once makes it known. Its five petals, formerly called nectaries, end in a closed tube, bent like a horn, and before the flower expands stand round the stem, making a curious as well as graceful form. The flower expanded, the five sepals, formerly called petals, spread in every direction, and allow the many stamens to be seen. The colour is a beautiful blue, or a blue shading into purple, and a variety is mentioned which is white in the middle. The leaves are divided into long lobes that approach each other. The plant is about a foot high. It is found only on the high mountains: above St. Moritz, M. Tödi, Gryon sur Bex, Zinal, Simplon, Chamounix, Sils (Engadine). "Do these plants really grow here?" we asked of the waiter, as we saw a beautiful bunch of them on the dining-table at one of the hotels at Zermatt. "Oh yes, in the woods near," was the reply. Searching for them with this rather vague direction, it was not before they were out of blossom that we found they grew near the Findelen glacier. It does not dry well. The common

Columbine is frequently found in dry and mountainous pastures.

Rarely, a plant somewhat akin to this is met with, Atragene Alpina, which really very much resembles the old-fashioned blue Clematis of our gardens. The Salève, and Mont Andey, near Bonneville, are mentioned as places where it may be found. It was a great pleasure to see it climbing up the rocks at Sils, Engadine.

3, 4, and 5. Anemone.

(PLATES III., IV., and V.)

Who does not know the Anemone? The cultivated kinds form one of the bright early ornaments of our gardens, while the wild white ones, their heads gracefully drooping, or opening fully their starry blossoms, mixed with Primroses and Dog-violets, carpet our woods in May. It is wonderful to find scarlet Anemones as common all about the coast of Nice and Cannes as the Wood-Anemone is with us. Their colour is so brilliant that the large nosegays of them, so easily gathered, actually give a glow to the room in which they are placed. It was only the other day that, coming accidentally upon a plant which had been long dried, we were surprised at the size and colouring of the specimen. A. stellata, perhaps after all the most pretty of its family,

3. *Anemone Halleri* .....HALLER'S ANEMONE.

is one of the first to open its star-like flower and welcome the spring all round the Mediterranean. None of these, though Stellata is mentioned by some under the name of Hortensis, as occasionally seen in Valais and Vaud, are found in Switzerland, but a number of curious and interesting kinds take their place. To begin, ranged with them is the well-known Hepatica of our gardens, which is found in mountainous woods, foot of Salève, Nyon, Thonon, &c. It will be well to notice the involucre of this plant, which is very near to the flower, and at first sight looks like a calyx. It should be compared with those of other species of Anemones, as this involucre is one of the characteristics of the family, and, when closely examined, it will be found to be separated into three divisions, which are united at the base. As in A. hepatica it looks like a calyx, so in many of the other species it resembles leaves, being leaf-like far down the stem, and so much sub-divided that it is easy to pass over the three-fold main divisions. The Anemones of Switzerland may be divided according to their seeds. In the first division this seed is very curious, having a lengthened tail, which gives the plant, after the flower is over, somewhat the appearance of a mop; or, if the expression be preferred, it may be called a feathery plume. These may be again divided into the Pulsatilla branch, the general characteristics of which are petal-like sepals and many stamens, common to the whole family. Flower from

one to three inches across, more or less covered with soft down; involucre a little way down the stem, so much divided as to look like moss, often with a reddish tinge; colour in Pulsatilla and Halleri (Fig. 3), purple, more or less dark; in Vernalis, white, often violet outside. Our plant, A. Halleri, is found on high mountains: Findelen-Glacier, Riffel, Mont Cenis. Varieties are named, according as the flower is erect, its sepals more or less pointed, or the plant more or less hairy.

Then we have A. Alpina (Fig. 4), often to be met with, growing to a much larger size than any of the above. The stem is hairy, and the flower is not without its short down, but this is far less a characteristic of the plant. The involucre, too, is more leaf-like, at a considerable distance from the flower, and has even sometimes short stalks. Its large white flowers, tinged with blue on the outside, are not uncommon in the Jura and Alpine higher pastures. They grow near the glacier of the Rhône in great luxuriance, the tall heads of the seeds giving the plant quite a different appearance from the same when it is in blossom. Sometimes the flower has a pretty yellow tinge, and then goes by the name of A. sulphurea. Its size depends very much on the situation; and it is strange to see the same that in the lower regions was two or three inches across, scarcely more than an inch when found on the bare side of the high mountains, and rising not more than an inch or two from the ground.

4. *Anemone Alpina* ....ALPINE ANEMONE.

5. *Anemone narcissiflora* .....NARCISSUS-ANEMONE.

In the other division of the Anemones the seeds are either like a woolly Strawberry or resemble those of our own Wild Anemone. A. Baldensis and A. sylvestris have fine large flowers; the former is rare, and is found only on the high mountains of the southern Alps; A. sylvestris, whose drooping, unopened buds have been thought to resemble Snowdrops, is less rare, and grows in lower and more sheltered spots. A. ranunculoides, Mr. Robinson tells us, is "like a Wood-Anemone done in gold," from its bright yellow flowers. A. narcissiflora (Fig. 5) differs from the rest of its family by growing in a kind of umbel of from three to five flowers on a stem from six to nine inches high. The individual white flowers are not large, and, as they are surrounded by their involucre, they have somewhat the appearance of three or four Strawberry-flowers tied together at the end of a long stalk. The leaves are roundish and very much lobed. Found commonly in Alpine pasturages, and on the heights of the Jura, Maderaner Thal, &c.

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6 and 7. Ranunculus.—Buttercup.

(PLATE VI.)

Buttercups and Daisies,
Let us sing their praises.

And well may they be sung, if beauty of form and great variety and abundance of growth are a title to praise. It

is well to make the most of these features, as the family is more noted for show than for use, its acrid and pungent juices having few valuable qualities connected with them.

In mentioning some of the one or two dozen given as natives of Switzerland, we pass over such as are found wild in our own country, and specially refer to those met with on the higher mountains. The well-known shape of the buttercup, R. acris or bulbosus, renders description almost unnecessary. It has a calyx of five sepals, and usually five, though sometimes more, petals, which in many of the species have a little scale at the base covering the nectary. In some this gets to be little more than a hollow coloured spot. In the yellow species the petals often shine as though they had been gummed. The many stamens are set close round the receptacle. Our first figure is that of R. Alpestris (Fig. 6), which forms pretty tufts on the rocky heights of the Jura and Alps, seated near some streamlet trickling down from the melted snow. The stem, with a kind of bractea-leaf here and there, bears only one flower, but these stems arise so thickly that they form a mass of white blossoms, which have rather the appearance of our Water-Buttercup; only each petal, of which there are five or six, is so deeply notched as to give the appearance of double the number. There is no scale to the nectary. The leaves are fleshy, smooth, shining, somewhat heart-shaped, with three five-fold divisions. It is not uncommon on the

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6. *Ranunculus Alpestris* .....ALPINE BUTTERCUP.

7. *Ranunculus Pyrenæus*.....PYRENÆAN BUTTERCUP.

mountain-heights; its pretty patches come soon after the snow has gone. Jura, Thoiry, Suchet, Mont Pilatus, Mont Catogne in Valais, Vallée des Ormonts, &c.

R. montanus, a little larger than the common buttercup, but much more compact in habit, and forming tufts of bright yellow, is found on the heights of the Jura and the Alps. There are one or two varieties, according to the size of the flowers and more or less divided leaves.

R. glacialis is to be found only on the high mountains, and it is one of the plants which climb the highest. Its thick stems bear from two to four rather large flowers, whitish within and purplish without, the calyx being clothed with soft reddish hairs. The leaves are fleshy, smooth, stalked, and deeply divided into long lanceolate lobes. Not very rare on the high mountains of the Alps, Fex-Valley and heights above Pontresina (Engadine), Great St. Bernard, Valley of St. Nicholas, Riffel, Col de St. Théodule, Mont Pennino (near the Hospice), top of Faulhorn, Jardin de la Mer de Glace, Ronche, Mont Cenis, Col du Mont Iseran.

R. Pyrenæus (Fig. 7). At first sight this does not look like a Ranunculus, as its leaves are very different from most of those of that family, and, indeed, very much resemble the leaves of a Snowdrop. This will at once serve to distinguish it. Its stem bears from one to three flowers, the petals of which soon fall off. It grows on rough stony

places of the high Alps, among the *débris* left by snow, glaciers, &c. Riffel, Mont Mille above Bagnes, &c.

R. Parnassifolius also is found among the rocky gravels of high mountains, its white flowers, with a large scale to the nectary, varying from one to many. The root-leaves are oval, heart-shaped, the others more lanceolate, more or less covered with cottony down. Great St. Bernard, Dent du Midi, Zermatt, Albula, High Engadine, Mont Meiry.

Very rare is R. rutæfolius; its white flowers, with orange centres and no scale, have from five to fifteen petals, and grow one or two on the stalk. The root-leaves are bi-pinnate, with thrice-divided segments. Between the Lac Noir and the foot of Cervin, mountains of St. Gall, Mont Cenis, Rhœtian Alps.

We must not leave this family without mentioning R. aconitifolius, known to some by the name Fair Maids of France, a double kind of which is to be seen in old-fashioned gardens. The white flowers, with a scale on the nectary, grow in a loose corymb of three or four together with long foot-stalks, on stems from a few inches to two or three feet high. The leaves are rather palmate, with from three to five divisions, their lobes pointed. Frequently seen in moist mountain-pastures, and thickets of the Jura and Alps, Pilatus, Maderaner Thal, &c.

8. *Berberis vulgaris* .....COMMON BARBERRY.

8. Berberis.—Barberry.

(*PLATE VII.*)

The Barbery is well known, either with its cheerful yellow blossoms, or its red coral-like berries, or perhaps in the form of a pleasant preserve. Whatever may be said as to the first and the last in connection with Switzerland, we can speak with gratitude of its refreshing acid berries, which we once found very agreeable in a walk along the rather tedious Visp-Valley, where they grow in abundance, in company with the cottony pods of the Vincetoxicum, or Cynanchum.

B. vulgaris (Fig. 8), with us the common, and often called wild, is a shrub about six feet high. The ovate hair-notched leaves grow in tufts on the branches, and have a threefold thorn at the base of each tuft. The flowers are yellow, with a coloured calyx, and hang in pendulous clusters along the stems. Stamens six, which will, one or all, curiously close round the large stigma on being touched at the base. The berries are long and red. The wood is yellow beneath the bark. Hedges, woods, and waste places. Mons. Bouvier says: "The berries of the Epine-Vinette, the common French name of the Barberry, constitute the real citron of the country. A decoction of its leaves is useful in dropsy and scorbutic complaints."

9. Fumitory and Corydalis.

(*PLATE VIII.*)

This family is now divided into two, and several of the plants we used to know by the name of Fumitory have to be called Corydalis. The division is made according to the seed, that of the Fumitory being like a roundish nut, while the Corydalis has a pod with many seeds. By this arrangement the Corydalis has the most showy flowers, as our wild Fumitories, though curious, are rather insignificant common weeds. The family is so remarkable in the shape of its flower, that it is impossible to mistake it when once it has been well noticed. The two sepals are scarcely more than a scale. The four petals are very unequal; the outer are lengthened into a spur, and the two inner, sometimes of a different, or a deeper, colour than the rest of the plant, are joined together at their tips almost in the fashion of a pair of sugar-tongs; these tips are a little spread out, and enclose the six stamens, which are united in two sets of three each. The plants are generally tender, that is, break easily. C. solida and C. lutea are reckoned among English plants, but the former is rather a doubtful native. C. lutea is often seen climbing among walls and rubbish, and is found abundantly among the stone dividing-fences of Derbyshire. Both are common in our gardens, as is also C. cava (Fig. 9), a species of a more graceful shape and of a brighter hue,

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9. *Corydalis cava* .....CORYDAL, ALLIED TO FUMITORY.

10. *Thlaspi rotundifolia* .....ROUND-LEAVED PENNY-CRESS.

which grows so thickly in some of the Swiss pastures as to give a deep colour to them. The leaves in this species are biternate with lobed segments ; the flowers, of a pretty pink, droop from the bending stem ; and the plant is not unlike a poor specimen of its relation, Dielytra spectabilis, which has of late years been so generally introduced into our gardens. Abundant in the Swiss pastures in the early spring, especially in Canton Valais, Lancy, Bernex, Compesières, Bex, St. Maurice, Balvais near Rumilly in Albanais, and about Annecy.

10 and 11. Thlaspi.

(*PLATES VIII. and X.*)

This plant brings us to the Cruciferæ, a family thus named from having its four petals in the form of a Greek cross. It has six stamens, four of which are long and two short, and agrees with the Linnæan class of Tetradynamia, having also the same sub-classes—Siliquosa, a pod longer than broad, like the Stock ; and Siliculosa, a pod broader than long, like the Shepherd's Purse. It may help to keep in mind the distinction to remember that the longest pod has the shortest name. Though the distinctions above mentioned mark out the family plainly enough, it is not so easy to distinguish one cruciferous plant from another ; the seed vessel is often a point which settles the matter, and this

sometimes requires close study. The family is not a showy one, and even in Switzerland is not marked by special attractiveness. If not showy, however, it furnishes many of our best-known kitchen-garden vegetables—Turnip, Cabbage, Radish, down to Mustard and Cress.

Thlaspi rotundifolium (Fig. 10) is found only at considerable heights on the mountains, when, almost within reach of the melting snow, among the gritty rubbish, its pretty purple masses may be seen lying close to the ground, and blossoming at the extremity of a kind of circle, or half-circle, the centre of which is filled by its smooth, tough, fleshy leaves. Those up the stem are often a little eared; the calyx is coloured. This bright little plant may also be known by its sweet smell. It does not dry well. The seed is siliculose. Mont Pilatus, Dent du Midi, top of Faulhorn, La Tournette near Annecy, Mont Cenis, &c.

T. Alpestre (Fig. 11) is very different in appearance, much more like our Shepherd's Purse, its small white flowers being rather insignificant; but they are very prettily dotted by the long coloured stamens, which at length become black. The plant is from four to ten inches high. The root-leaves are roundish-oblong, on long stalks; the higher ones embracing the stem are more arrow-shaped. Heights of the Jura and Alps, Le Dôle, Zermatt, Mont Bernina, Mont Cenis, Mont Margériaz.

12. *Iberis amara* .....BITTER CANDYTUFT.

12. Iberis.—Candytuft.

(PLATE IX.)

This is a well-known plant of our gardens, as, of the many seeds hopefully sown in spring, it is one of the most likely to come up. The purple kind is our most common annual, but the I. amara (Fig. 12) of Switzerland is very often white, with purplish calyx and buds. The flower grows in a sort of umbel-head in the shape of a flat circle, which becomes lengthened. The unequal petals is what especially marks the Candytufts, the two outer being much larger than the two inner. As they are so arranged that the longer are outside, the flower has a rayed appearance. The leaves are rather thick-toothed, especially the lower ones; seed siliculose; plant from six to nine inches high. Not unfrequent in sandy places in West Switzerland. In the cantons of Geneva, Berne, St. Gall, and Tessin.

13. Alyssum.

(PLATE X.)

None of the species of Alyssum can claim to be more than doubtful natives with us, but they are too common and too well known in gardens not to have escaped here and there. There are few who do not recognise the bright

yellow patches of A. saxatile which adorn our gardens in May. This is not a native of Switzerland, but A. Alpestre (Fig. 13), though scarcely so showy in its flowers, is much prettier in its growth. Its half-woody stems run spreading along, and throw up little tufts of leaves not much larger than those of Thyme, but hoary-white, covered with hairy down. The star-like form of these hairs is very interesting as seen through a pocket-lens or microscope of low power. The flower-stalk is leafy, all the way up, with these small but thick-set leaves, and then comes the head of yellow blossom. The filaments are winged, and the seed is siliculose. On the tops of the Alps (rare): Zermatt, Ronche, Mont Cenis.

14. Draba.

(*PLATE XI.*)

Draba verna, or Witlow-grass, the little white weed of our walls in early spring, is, perhaps, the best known to us among the wild Drabas. D. aizoides (Fig. 14), one of the most handsome of its kind, may be easily cultivated in our gardens, but is only found wild in England near Swansea. It is not very rare on the high rocks of the Jura and the Alps. The bright green leaves in tufts, or rosettes, are stiff, and edged with comb-like hair. From the midst of these the

11. *Thlaspi Alpestre* .....ALPINE PENNY-CRESS.

13. *Alyssum Alpestre* .....ALPINE YELLOW ALYSSUM.

14. *Draba aizoides* .....YELLOW DRABA.

15. *Viola pinnata*.....PINNATE VIOLET.

17. *Dianthus Carthusianorum* .....SWEET-WILLIAM PINK.

stem rises about three inches, bearing a loose corymb of a few rather large, golden-yellow, sweet-scented flowers. Seed siliculose. Granite rocks of the Alps and Jura : Riffel, &c.

15 and 16. Viola. –Violet and Heartsease.

(*PLATES XI. and XII.*)

Everyone knows Violets and Heartseases, and the shape of the flower is so special to themselves that they are recognised at the first glance. But to distinguish them one from another is a quite different and more difficult matter. They are found in Switzerland in large bright patches, of various colours and shades, growing in the free way of our Dog-Violet, and abounding in flowers. Perhaps no locality has more of them than the Pass of the Great St. Bernard. On going there after their time of flowering was over, we took a little patch of earth for the sake of some other flower, and carefully kept it through the winter, when lo ! the next spring, a little plant of V. biflora appeared with its two pretty dark-lined blossoms. The Violas are divided into those with and those without stem. This latter means that the leaves and flower spring direct from the root, as is the case with the Sweet Violet. We pass by the more

known ones to notice three which are not found wild in England, the characters of which are very distinctly marked.

The general characters of the Viola are five petals, unequal, the lower lengthened into a spur; five stamens, rather insignificant, the anthers meeting in the form of a cone, two of the filaments lengthened into the spur of the petals; and stipules on the stem of more or less consequence.

Viola pinnata (Fig. 15) has rather small, sweet-smelling, pale-purple flowers. It is distinguished by its leaves, which grow in the pinnate form; or rather, perhaps, they are palmate, much divided, being thus very different from those of the rest of the family. It is very rare, scattered through the valleys in the southern chain of the Alps: Valley of Saas, Zmutt-Glacier, Alesse in Valais, Grisons, Bessans in Maurienne.

V. calcarata, Spurred Violet (Fig. 16), does not look very unlike some of the wild Pansies, but may be recognised by its long spur, and more or less deeply-lobed stipules, which it is not difficult to mistake for leaves. It sends its runners underneath the ground, and springs up here and there with a tuft of leaves bearing a single one-flowered stalk. It is found on very high mountain-pastures: Jura, Mont Semnoz, Mont Charvin, Col des Aravis, Mont Méry, top of Faulhorn, Mont Cenis, Little St. Bernard, Riffel. A yellow variety is mentioned as being found at Mont Cenis, Great St. Bernard, Zermatt.

16. *Viola calcarata* .....SPURRED VIOLET.
18. *Dianthus cæsius* .....CHEDDAR-PINK.
21. *Saponaria ocymoiaes* .....SOAPWORT.

V. biflora, Two-flowered Violet. With leaves somewhat of the growth of the Dog-Violet, very heart or kidney-shaped, this pretty little Violet is known at once by its flowers being in pairs. They are of a clear bright yellow, with a short spur, and marked by a few very dark-brown lines. These flowers grow on feeble stems, which are also frequently furnished with a pair of leaves. It is not uncommon, and grows in moist shady places of the Alps and Jura: St. Bernard, Mont Pilatus, &c. It may be easily cultivated.

17, 18, and 19. Dianthus.—Pink.

(PLATES XI., XII., and XIII.)

We seem to be in the midst of the sweet-scented plants just now, and it is hard to say whether the Violet or the Pink is the sweeter. Perhaps it is not the sweetest of the Pinks that are most commonly found adorning the mountain side, but all are fair in form and pretty in colour. The Swiss Dianthuses are divided into three kinds: first, those which have several together in a head; secondly, those with a solitary, or perhaps a double, flower; and thirdly, those with a solitary or double flower that have the petals deeply fringed or divided.

D. Carthusianorum (Fig. 17), like all the rest of the family, has ten stamens, five long-clawed petals, and five

divisions to its long tubular calyx. Its head of flowers contains from two to five, the petals are notched, and the plant has rather the appearance of a small head of Sweet-William. The colour is a bright dark crimson—well described by the word atrorubens, which is given to some of the varieties—without any lighter spots. The notches of the petals are very irregular. It has a bearded, brownish kind of involucre; the calyx is also bearded. The leaves are rather smooth, sheathing. In dry places in the plains, and on the mountains. Zermatt, Glacier du Rhône, upper part of Rhône-Valley, Simplon, &c.

D. cæsius (Fig. 18). The charming kind we have at Cheddar, varying in size according to situation, with flowers of a true pink colour, calyx and stem with lines of dark purple, which mixes prettily with the glaucous-green. The stems are jointed. It comes up very easily from seed, which should be set in chinks of old walls. Rocks of the Alps and Jura: rocky pastures of Zermatt, Reculet, Suchet, and Chasseron.

D. superbus, or Fringed Pink (Fig. 19), is very easily recognised from having its five petals, which are very distinct, deeply cut into stripes. The flowers grow one or two together, are from two to three inches across, of a mauve colour, with a dark mark on each of the petals before they begin to divide, and have a fragrant smell. The plant is a foot or a foot and a half high, with green pointed lanceo-

late leaves, rather membranous at the edge. Abounds in many places. Some friends lately passing over the Julier-Pass found it in such quantities that they kept on making little bunches to present to the various travellers they met, in order that these might enjoy the delicious scent. Grows well and truly from seed.

D. glacialis is said to have flowers of a brilliant rose colour, and to grow almost close to the ground. Its rigid grass-like leaves are an inch or an inch and a half long. Very rare. Mont Umbrail in the Rhœtian Alps, Piz Cucarné, Julier-Pass.

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20. Gypsophila.

(PLATE XV.)

This pretty family has, at first sight, somewhat the appearance of a Saxifrage, but there is a pinkish hue about it which distinguishes it, and on closer examination its flowers are seen to be in the form of a Dianthus. Stamens ten, petals five. G. repens (Fig. 20) is found among the sandy grit of rivers and mountains. Its terminal corymbs are inclined to a three-fold division, the flowers are more or less rosy, the leaves are smooth and linear. It is now much cultivated in England to mix in nosegays.

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21. Saponaria.

(*PLATE XII.*)

The annual Saponaria is well known among annuals, poor and rubbishy, but generally put forward in lists of seeds. Quite different is S. ocymoides (Fig. 21), and much more worthy of cultivation. It forms some of the prettiest patches seen on our rock-work, and well deserves the pains that may be bestowed upon it. But in the Jura and the Alps it is found in full perfection, where it fixes itself in the chinks of the rocks, their grey colour well contrasting with its bright pink blossoms. It has ten stamens and five petals; the five-toothed, ten-nerved, and rather swollen calyx is also a little sticky. This and the stems have a tinge of dark-red; the leaves are elliptical and slightly downy. Exposed rocks on the low mountains: Thônes, Alby, Martigny, Sion, Jura.

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22. Silene.

(*PLATE XIII.*)

There are several Silenes, or Campions, well known with us. The Pink Campion, so much cultivated with the Forget-me-not in the early spring, is found wild in Switzerland, as is

19. *Dianthus superbus* .....FRINGED PINK.

22. *Silene acaulis* .....MOSS-CAMPION.

23. *Lychnis Alpina* ....ALPINE LYCHNIS.

the Bladder-Campion, with others. But S. acaulis (Fig. 22) is very different in appearance from these, as its small flowers do not rise above an inch from the ground, and sometimes have no stem at all; hence its name. Indeed, the plant has the appearance of pink-flowered moss—if such a thing with this kind of flower were possible—as its rather wiry leaves are matted together in short dense clusters or masses, often covering the sides of the mountains with large patches. Stamens ten, petals five. The seeds are produced freely, and they would probably grow easily. The flower has the great drawback of withering very soon after being gathered. It must not be confounded with Androsace Heerii, to which it has some resemblance, and which is even more beautiful. Grassy slopes of the Alps. The pink bunches of S. Armeria look rather like Saponaria ocymoides, and grow in the same situations.

23. Lychnis.

(*PLATE XIV.*)

Of the same family as our Ragged Robin and Corn-Cockle, Lychnis Alpina (Fig. 23) far exceeds them in beauty. It is known in only one or two places in England and Scotland, but is not uncommon on the high mountain-

pastures of the Alps. Its head of pink flowers is rather pyramidal, to which the ten stamens and the deep clefts of the five petals give somewhat of a fringed appearance, and add to its beauty. The leaves are smooth but not clammy, those of the root massed together. High mountain-pastures of the south-west of Switzerland: Riffel, Vallée d'Anniviers, &c.

24. Cerastium.—Chickweed.

(PLATE XV.)

We are, happily, not called upon to go into the perplexing varieties of the Cerastium, which, after all, does not contain the Chickweed of the bird-keeper, which is a Stellaria. The number of the styles, and the petals being longer or shorter than the calyx, are some of the distinctions mentioned, but these features cannot always be relied on.

C. latifolium (Fig. 24)—for this name we are inclined to give to our figure—is a pretty plant trailing along the ground, its large pearl-white flowers being much the same as those of the well-known edging plant of our gardens which sometimes goes by the name of Fair Maid of Perth. The ten stamens, of a pale yellow, are not very conspicuous, but, like most of the Cerastiums, its five petals

20. *Gypsophila repens* .....CREEPING GYPSOPHYLL.
24. *Cerastium latifolium* .....BROAD-LEAVED CERAST

are deeply cleft, looking almost like ten. The foliage is very different from that of our garden species, which is white and downy, and valued on that account; that of C. latifolium is smooth, and of a bright green. Found among the *débris* of schist in the Alps.

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25. Oxytropis.

(PLATE XVI.)

The Oxytropis brings us to quite a new tribe, which, though it is fairly represented in Switzerland, is not particularly characteristic of the country. On the other side of the Alps, in Italy, the number and variety of the Papilionaceous flowers are very great. They are called by this name in natural divisions of botany from the supposed resemblance of the flowers to a butterfly, and they are still better known by the name of pea and pea-shaped, forming the class Didynamia of Linnæus. The ten stamens are all joined together the greater part of their length; at last one is separated from the rest, and the whole are covered by the two lower petals. The five petals are very unequal; the larger one is called the standard, the two side ones wings, and the remaining two, which, though separate at the bottom are joined at the edges and cover the stamens, are, from the sharp ridge they make, called the keel. The

seed is in a pod. No one can fail to recognise the pea-shaped flowers at a glance; their various divisions are much more perplexing. O. montana (Fig. 25), often given as the name of the pretty little flower in our sketch, is so like O. cyanea that it may be mistaken for it. The latter is more silvery. O. montana rises three or four inches high, with rather straggling leaves and stalks, the stalks sometimes having a few leaves. The flowers are in a roundish head, something like our Bird's-Foot Trefoil, or Ladies' Fingers, only, instead of being yellow, they are of a variegated purplish blue, mixed with white. The leaves grow in pretty elegant pairs, to the number of six or eight, with a terminal leaflet, and are rather hairy. Alpine mountain-pastures: Zermatt, Great St. Bernard, St. Nicholas.

26. Trifolium.

(*PLATE XVI.*)

We know many of the Clovers more by their round heads of flowers, than by their pea-shaped form; but, when closely examined, each of these little blossoms will be found to be papilionaceous, though often the upper petal is more like a tube than widely expanded. Trifolium Alpinum (Fig. 26) is about four or five inches high, with large heads of dullish-red flowers, an inch or two across.

25. *Oxytropis montana* .....MOUNTAIN-OXYTROPIS.

26. *Trifolium Alpinum* .....ALPINE TREFOIL.

The separate flowers of these are not stalked at all, or very shortly so, but they form a loose kind of head, having the form of two umbels, different from the dense balls with which we are familiar in some of the trefoils, and have short stipules at the base of the umbels. The flowers are long and pointed, not opening wide, and the divisions of the calyx are unequal, with rather awl-shaped teeth. The leaves are in threes, and rise from long narrow and strongly-veined leaflets. Frequently met with in the pasturages of the high Alps.

27. Dryas octopetala.

(PLATE XVII.)

This flower (Fig. 27) is one of the mountain-gems. Found on our own mountains, particularly on those of Scotland, it is frequently met with on the Jura and the Alps. The flower is something like that of a large Strawberry, creamy in colour, with very many yellow stamens, having, however, eight petals and eight sepals; hence its second name. Its growth is exceedingly pretty; its reddish half-woody stems creep along the ground, and give forth, here and there, tufts of small, dark, bluntly-notched leaves, on stalks longer than themselves, for they do not much exceed an inch. These leaves are supposed to have a re-

semblance to those of the oak ; hence the first name. They are quite white on the back, with a felt-like down, and the front of the leaf, often turning over at the edges, gives a pretty border to them. The seed is very curious, being composed of a number of long, feathery, unjointed awns. Frequent in high Alpine pastures. Little St. Bernard, Sils (Engadine), Maderaner Thal, &c. The leaves are said to be used instead of tea in France and Switzerland.

28. Geum.

(PLATE XXI.)

G. montanum (Fig. 28). This bright plant sends up its solitary yellow blossoms thickly from its root, more in the style of a Marsh-Marygold than that of the Geums of our hedges. It has the same kind of rough leaf as the latter, but different in shape, being pinnate-lyrate with the end-lobe much longer than the others. The seed has somewhat the same curious plume as the Dryas, which at once makes it known. Mountain-pastures. It likes the rubbish of the schist and granite-rocks. We have dried specimens whose leaves quite sparkle with the grains of mica here and there on them still. It keeps its colour well when dried. G. montanum much resembles repens, which has long runners and even a finer and more beautiful flower. It is rare, but

27. *Dryas octopetala*.....DRYAS.

29. *Potentilla aurea*.....GOLDEN POTENTILLA.

should be looked for at Mount Buet, the Diablerets, Great St. Bernard, Zermatt, Simplon, Glacier of Cambrena in the Engadine, Mont Cenis, Col of Mont Iseran.

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29. Potentilla.

(PLATE XVII.)

It is very easy to recognise the general features of this pretty family, from its resemblance to the Strawberry, which, as everyone knows who has frequented *table-d'hôte* dinners, much abounds in Switzerland. The Potentillas are most of them yellow, though this is by no means the case with all, and the colour is one help in distinguishing them amid the perplexing varieties and sub-varieties into which they have been divided. No flowers dry better; they should, therefore, be gathered freely, as the common Potentilla, P. reptans, abounds, as, on heaths and pastures, does the smaller, P. tormentilla, very much like it, but usually to be distinguished by having only four petals, while the other has five. They will be found very useful for dried nosegays. Apart from colour, the divisions of this family are determined very much by the shape of the leaf. Thus we have, first, those with a pinnate leaf, of which P. anserina, well known in England by the name Goose-Grass, or Silver-Weed, is a

good example. It is very commonly found in waste places, running along the ground, its leaves being of a silvery whiteness at the back. One of the points to be noticed is whether the leaves have this whiteness, some of the species being distinguished for it, others being green on both sides. Then we have leaves with five or seven divisions, and, again, those with three. Of this last, P. fragariastrum, our white Barren Strawberry, one of the earliest flowers on our banks, is a good representative.

These divisions may afford a little help in determining a plant among the twenty or thirty species of Potentillas given by Swiss botanists. The family generally has about twenty stamens, rather fewer than others of its tribe; it is distinguished by its kind of double calyx, which has divisions twice the number of the petals. They are, in most of the species, five; sometimes, as we have said, four. The seed has no plume to it, and does not become a fruit, like the Strawberry, which grows often so near it on the bank or hill-side.

P. aurea (Fig. 29), possibly the same that is called P. crocea, may be recognised by its bright, almost orange, yellow, and by having a yet deeper crocus-yellow spot at the base of each petal. The petals, smaller near the base, afterwards spread out and touch each other. The root-leaves have five divisions, those up the stem three, the under nerves of the leaf and its edges have rather a silvery

30. *Rosa Alpina* ....ALPINE ROSE.

hairy down; the upper side is smooth. Mountain-pasturages of the Jura and the Alps: Le Reculet, the Dôle, Mont Salève, Zermatt, Sion, Maderaner Thal, Pilatus, Great and Little St. Bernard. It will bear transplanting well.

30. Rosa.

(PLATE XVIII.)

We do not place the Queen of Flowers among the typical plants of Switzerland. It may seem strange to say this, when no less than twenty-seven species of them are given by one of the latest botanists, and many varieties under some of the species. There is no doubt they have been too much divided. Of course, they are plentiful on the lower grounds, in woods and thickets, and a few climb higher; but we cannot expect to meet with them where the stern mountains lift their rugged forms to the skies. Those who would study roses should notice their colour, the shape of their fruit, whether the plant is smooth, downy, or rough, the shape of the thorns (whether curved or straight), the number of the leaflets, and whether the notches on them are double or single. Gaudin classifies the Swiss roses thus. After mentioning R. arvensis and R. stylosa, as species distinguished by having their styles united in a column, he divides the others in the following way:—First, those which

have their fruit for the most part round; these again into those which have their leaves only simply notched—R. spinosissima, something like our Scotch roses, and R. cinnamomea—and those whose leaves are doubly notched, R. villosa, R. Gallica, and R. eglanteria. Then, secondly, those generally having their fruit oblong, contain, first, those with the simply-notched leaves, R. canina (Dog-Rose), and R. rubrifolia, and then those with the doubly-notched leaves, R. glandulosa, R. tomentosa, R. rubiginosa (Sweetbriar), R. spinulifolia, and R. Alpina (Fig. 30). The last is the one of our figure; it goes by the name of the Rose des Alpes, Alpine Rose, real Alpine Rose, as it is sometimes called, and it is generally said to be known by having no thorns. It is not true that it is quite without thorns, but when found they are only on the young shoots, and the stems are generally so smooth as to justify the name of the Thornless Rose. It must not be confounded with the Alpen-rose, which is a Rhododendron. R. Alpina has five sepals to its calyx, often longer than the petals, and becoming leaf-like at the end; the five petals are of a beautiful deep rose colour, with a shade of purple in it; the many golden stamens are fixed on the calyx, not on the receptacle, as in the Ranunculaceæ, this being the great distinguishing mark of the Rose family. The styles are many, very short. The stems are of a brownish colour; the leaflets, smooth, bright green above, bluer beneath, with a double notch (this more or

31. *Cotoneaster vulgaris* ....COMMON COTONEASTER.

32. *Alchemilla Alpina*.....ALPINE LADY'S MANTLE.

less irregular), are, to the number of seven or nine, on each side of a leaf-stalk, which has stipules an inch or two long at the base. The fruit is round, or inclining to oblong, scarlet-red when ripe, and crowned by the persistent upright sepals. Forests of mountainous regions: Maderaner Thal, &c.; frequent.

31.—Cotoneaster.

(*PLATE XIX.*)

This plant, so well known as cultivated, is found wild in only one place in our island. Its small, unusually dark leaves, white underneath, lying so thickly on each other, and its berries of a peculiarly pretty shade of red lighting them up, and often lasting till the flowers come again on the plant, make it almost impossible to mistake it. C. tomentosa has small white flowers, with white petals and many stamens. They are solitary, or sometimes two or three together, but, like the leaves, they are produced so thickly as often to seem to be in masses. The plant is an evergreen shrub; its branches are inclined to lie on the ground, where they often root, or to run over any rocks or stones to which they may be near. Our variety with smaller leaves is

mentioned under the name C. vulgaris (Fig. 31). Not uncommon on Alpine and Jura rocks: Salève, foot of the Môle, the Abymes near Chambery.

32. Alchemilla.—Lady's Mantle.

(*PLATE XIX.*)

This plant, known to us by the name of Lady's Mantle, has rather insignificant green flowers, and would scarcely deserve mention in a small selection such as this, where the difficulty is to know what to choose among so many claimants, were it not for the prettiness of the growth and the great beauty of the leaves of A. Alpina. The yellow-green flowers of the family are without petals, but they have a double kind of calyx divided into eight, four of which divisions are smaller. There are four stamens, sometimes not so many.

A. Alpina. The radical leaves are on long foot-stalks; they are palmate, with from seven to nine divisions, irregularly notched at the edge, green at the top, and covered underneath with silvery shining hairs, which also clothe the stem. It would be worth while to dry these leaves for nosegays. Common in all the pastures of the Alps and the Jura.

33. *Epilobium Dodonæi* .....WILLOW-HERB.

34. *Sempervivum arachnoideum*.....SPIDER-WEB HOUSE-LEEK.

37. *Saxifraga aizoides* .....YELLOW MOUNTAIN-SAXIFRAGE.

33. Epilobium.—Willow-Herb.

(PLATE XX.)

The colour of the Willow-Herb is generally pretty, and E. hirsutum, the Great Willow-Herb—known in some places under the name of Codlins-and-Cream, from the top shoots having a pleasant odour of cooked fruit—may rank among the handsomest of our wild plants. They are distinguished not only by their pink colour, but by their stamens and pistils, the latter especially. In some this is four-cleft at the summit, and, as its being so or not forms one of the distinguishing marks between the species, it should be carefully noticed. The parts of the flower are in two, four, or eight. The different species vary much, according to situation, and thus may easily be confounded with each other. Our figure, E. Dodonæi (Fig. 33), or rosmarinifolium, or Fleischeri, represents one of the prettiest, though by no means the tallest, species. Its almost-woody, branch-like, stems often hang over the rocks and stones on the bank of a stream: for, like most of its family, it loves moisture; or it may take possession of a little islet of sand left in the bed of a small river, and turn it into a patch of beautiful colour. Its four entire rose-coloured petals have a touch of purple in them, and are so far apart as to allow the four dark sepals to appear between them. These are of

a crimson-chocolate colour, but become a bright purple when dry. The stigma is large and conspicuous, with four white divisions, and rises from the very long germen, which looks almost like a thick stem below the flower. The eight stamens have at first a bluish tinge; they are inserted with the petals. The seed-pods are very long and narrow; the seeds are numerous and crowned with silky plumes of hair. The leaves, which are of various lengths, with only a central vein, rise from one point in little tufts along the stem, much like those of Rosemary, whence one of its names. In valleys of the Alps, on the banks and in the bed of torrents: Zermatt.

34. Sempervivum.—House-Leek.

(*PLATE XX.*)

The curious, though not very beautiful, form of the House-Leek is common enough in England, nor is it less so in Switzerland; but our figure represents one of the charms of that country, S. arachnoideum (Fig 34). The rosettes of leaves are very much smaller and finer than those of the common House-Leek, and covered, especially when young, with a fine white down, almost like cobweb, reaching from one rosette to another; whence the name. This, however,

28. *Geum montanum* .....MOUNTAIN-AVENS.
40. *Astrantia major*.....LARGER ASTRANTIA.

varies, and is sometimes little more than silken hairs at the points of the leaves. It scarcely seems worth while, on account of this difference, to set up a new variety. With these little rosettes it fills the chinks of rocks, adorning their grey surface with large patches, formed by the suckers it throws out all around, that are often of a yellowish colour, tipped with pink and purple, the smaller of which have much the appearance of some of the Stonecrops. The flower-stem, from four to six inches high, rises from one of the rosettes, with its alternate, lumpy, fleshy leaves, and bears a crowded, irregular head of flowers, which usually do not all open at the same time. Their colour is scarcely pink, scarcely scarlet, but something between the two, and, when coming out in the full sunshine, they are so brilliant as scarcely to fail of attracting attention. There is something about their shape and brilliancy which reminds one of the brightest of Sea-Anemones. The flower is about an inch across, with from nine to twelve pointed petals, having a deeper coloured line down the centre. The stamens, some with a yellow anther, others abortive, vary from eighteen to twenty-four. It may be very easily grown, but its blossoms do not look the same in England as in Switzerland. It is not uncommon on the rocks of the high Alps: Little St. Bernard, Maderaner Thal, Andermatt, Saas-Valley, &c.

35, 36, 37, and 38. Saxifraga.—Saxifrage.

(PLATES XX., XXII., and XXIII.)

The Saxifrages, which form one of the most characteristic families of Swiss flowers, are not so striking in their colour as many of their companions, but are remarkable for the beauty of their growth, the wide range in which they are found, and the variety of their species. Indeed, the latter makes them a perplexing study for the young botanist, especially if he endeavours to enter into some of the unnecessary varieties that have been named. There are, however, broad distinctions which help to remove the difficulty. In general, they may be said to prefer the higher ranges of the mountains, and some of them are among the highest climbers of all. S. retusa is found near the Vincent-hut on Monte Rosa; and S. moschata, or muscoides, on St. Théodule and on the Grands Mulets, 10,000 feet high. It is impossible to do more than make a selection from the twenty-five, or more, species which may be found. They are characterised by their five petals, ten stamens, and two styles.

Among those which are distinguished by their root-leaves being in rosettes, we select the most noble of the whole family, S. cotyledon (Fig. 35), of whose size and form our figure gives but a very poor idea. Its large rosettes, often from six to eight inches across, are formed of

35. *Saxifraga cotyledon* .....PYRAMIDAL SAXIFRAGE.

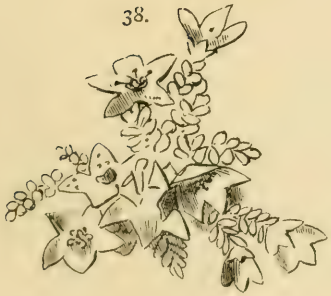
roundish leaves, with a whitish, serrate, rough, cartilaginous edge, and delight to perch themselves on the very edge of the rocks and cliffs, over which they wave their blossom, as if in triumph at a sense of being in safety. This blossom is a pyramidal loose panicle, a foot or two long, crowded with quite white flowers, relieved by the red of the stamens stem and calyx of the unopened blossoms. Most tantalizing is it to see them blooming quite out of reach, and wise are they who resist the temptation of getting into dangerous places after them. Such being the difficulty of reaching them, it was with pleasure that we received a very handsome specimen from a German gentleman, accidentally met with, who added to his former kindness in answering some botanical questions, by walking into the *salle à manger*, and saying, as he held out his prize, "I 've brought this for you." On granite-rocks in Central Switzerland: Maderaner Thal, top of the Brevent, Mer de Glace, foot of the Aiguille du Dru.

S. hypnoides (Fig. 36), heterophylla, or intermedia—for the Mossy Saxifrage varies a good deal in its forms, and according to rather slight differences has had various names given to it—may be known by a leaf very different to the first-mentioned, as it is divided, something like moss. The flowers are rather large and white, on a stem four or five inches high, rising from a moss-like cushion of leaves. It is well known on the British mountains. It is perhaps the

same that, under the name of intermedia, or controversa, may be found at the Pissevache-Waterfall.

S. aizoides (Fig. 37) has yellow flowers in a loose panicle of from two to twelve, but the leafy, branching flower-stems, pinkish near the root, are often so thick, that they present masses of blossom, rising above the bed of leaves below, which are shining and pointed, here and there fringed with a silky hair. The rather narrow yellow petals, dotted with red towards the tip, allow the light-green sepals to be seen between them, so that it gives the flower the appearance of ten petals; they are arranged round a kind of raised disc, and the ten stamens, when the flower is expanded, lie along the centre of each petal and sepal, their anthers touching its tip. It grows easily from seed. On the banks of streams, in moist places, on the Jura and Alps: Mont Salève, Mont Brison, La Tournette, Great St. Bernard, Zermatt; also known on the high British mountains.

S. oppositifolia (Fig. 38) is very different in appearance from the last-mentioned; it, too, is common in the Scotch Highlands; it loves the high mountain-ranges. It has thick, small, crowded, opposite leaves, fringed with rather stiff hairs, which, when the plant is in blossom, are often almost hidden by the rather large flowers, which rise on stems about an inch high, and are of a beautiful purple colour, the white stamens just appearing in the centre. Rocks of the



36. *Saxifraga hypnoides* .. ..MOSSY SAXIFRAGE.

38. *Saxifraga oppositifolia* .....PURPLE SAXIFRAGE.

39. *Drosera rotundifolia*.....COMMON SUN-DEW.

high mountains: Riffel, Saint Théodule, Great St. Bernard, Grands Mulets, top of Faulhorn, Le Reculet in the Jura, Mont Iseran, Margériaz near Chambery.

The Sedums, or Stonecrops, have a good deal of resemblance to the Saxifrages, only they have five styles instead of two, and are remarkable for their fleshy leaves. This makes it almost impossible to dry them, while on the same account they travel well and last alive a long time. It is, however, not so easy at length to make the plants grow and flower successfully. They abound in Switzerland—from the common Yellow Stonecrop with which we are familiar in England, crowning old walls with its golden hue, to the yellowish cream-coloured blossoms that rise on long stalks from rosettes, which, with their grey-green and coloured edgings, are often almost as tempting as the flowers themselves.

39. Drosera.—Sundew.

(PLATE XXIII.)

We do not mention the Sundew because it is a speciality of Switzerland, for it is well known in England where there are bogs, especially in those at all elevated or peaty. But from its curious character, and from its being remarkably abundant in Switzerland, it seems to demand notice, and it

can hardly fail to attract attention, growing, as it does, side by side with one of the prettiest of our British wild flowers, the Grass of Parnassus, to which it bears a near relationship.

The white blossom, expanding only in sunshine, is small, and grows on a stem, which, at first rolled back, gradually opens, and ends in a one-sided few-flowered raceme, with from five to eight petals and stamens and three or four divided styles. It is the leaves that are the curious part of the plant. They are green in the middle, with a pinkish border, are round in shape, and spread on long stalks all round the root. They are covered on the top with red hairs, which have a clammy drop at the tip—whence the name, Sundew. Very common in the situations above mentioned.

D. longifolia, which does not differ much from the Round-leaved Sundew, D. rotundifolia (Fig. 39), is distinguished from it by its more erect and longer leaves, which taper into the foot-stalk. It is much less common. Crevin near Geneva, Arenthon near Bonneville.

Those with still narrower leaves, and much larger in growth, have had the name Anglica given to them. Not unfrequent. Einsielden, Rheineck.

40. Astrantia major.

(*PLATE XXI.*)

This flower (Fig. 40), well known in old cottage gardens, has nothing brilliant about it, but it is pretty in its quaker-dress, and will furnish, when dry, a much more respectable appearance than some of its more showy neighbours, who will have sadly lost their charms. Its flowers, which are often imperfect, look like a number of stamens, and are in the form of umbels; but that which gives its character to the plant is a kind of grey involucre that surrounds them, consisting of from fifteen to twenty bracts, prettily tinged with pink and having two or three dark lines running lengthways along them, forming a kind of frill. The plant is from one to one and a half feet high;* the lower leaves are palmate, generally with five divisions. Mountain-pastures, and abundant near rivers in the plain.

A. minor is a much smaller and more graceful plant. Its palmate root-leaves, on long stalks, have seven divisions. The involucre is white, as is also the rest of the flower, except the anthers of the many stamens. Alpine heights and valleys.

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* The illustration gives only a small section of the plant.

41. Bupleurum ranunculoides.

(*PLATE XL.*)

This curious little plant (Fig. 41), which at first sight looks like a green Ranunculus, as its name tells, is really one of the Umbels, and its appearance is owing to the involucre which, divided into five, surrounds the flowers in the form of a calyx, or corolla. These flowers are on little stalks, but, as altogether they do not exceed and scarcely equal the involucre, it is their stamens chiefly that are seen. There is a second kind of involucre, consisting of two leaves, where the stem first divides into the umbel (Fig. 41). The plant is about three inches high, the leaves long, linear, and grass-like. Met with commonly in the rocky pastures of the Alps and Jura.

B. stellatum, a much larger and really handsome plant, is found abundantly in the Engadine mountains: above Pontresina, and the Bernina-Pass. It has somewhat the appearance of a Spurge.

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42. Sambucus racemosa.—Elderberry.

(*PLATE XXIV.*)

So well is the Elderberry known that any description of it is scarcely necessary. Its creamy blossoms, with their

42. *Sambucus racemosa* .....SCARLET ELDER.

44. *Linnæa borealis* ..... LINNÆA.

43. *Galium cristatum* .....BEDSTRAW.

70. *Lithospermum-purpureo-cæruleum*.....GROMWELL.

somewhat faint smell, are welcome, because they tell of the time of early summer and busy haymaking, and do a fair share in adding to the perfumes of the toilet; its berries so black, so juicy, are much sought after to make the wine that, mixed with the fragrant spice, furnishes a warm cup on a cold winter's night. Pleasant though this may be, it will be gladly given up by the advocates of temperance; and the S. racemosa (Fig. 42) will furnish no such temptation, for we never heard of its pretty berries being made into wine. These are rather smaller than those of the common Elder, of a bright red, and ornament the mountain woods, though usually the tree on which they grow is not so large as S. nigra. The flowers are much the same, cream-coloured, in umbels, stalked, the petals turned back, stamens five, and style with from three to five divisions. In mountainous woods: abundant between Amsteg and Andermatt, on the Brünig Pass, &c.

43. Galium.—Bedstraw.

(*PLATE XXV.*)

There is scarcely any part of temperate Europe without some kind of Bedstraw, of which England has its full share.

A purple and a red kind are mentioned as growing on the dry hills of Tessin, but generally the species of Switzerland are pretty much the same as we have, only they often grow more luxuriantly. As a general description, they are climbing plants, whose weak stems manage to mount to a considerable height; they have whorled sessile leaves, and white or yellow flowers, with the exception above mentioned. These flowers, with their four stamens and four lobes to the petals, grow in axillar or terminal cymes, which are sometimes nothing more than mere clusters of blossoms. Often, however, they form large branching panicles, the little star-like flowers thickly massed together, prettily making their way over the rough bank, or wild rock, or through the thick hedge. The distinctions between the species are made according to the number of leaves in the whorls, whether the panicles are terminal or axillary, whether the fruit and the angles of the stem are rough or smooth, and whether the corolla has a little point on the lobes of its petals. Our figure (Fig. 43) represents G. mollugo, with about eight leaves in its whorls, of which many varieties have been made. It has been called lucidum, cinereum, cristatum, according to the more or less narrow leaves, the closeness or diffusion of the panicle, the greater or less prominence of the points of the corolla. It is, no doubt, one of the handsomest of the white kinds, but it varies according to situation. The panicles are chiefly terminal, with-

out much leaf at the divisions, but some are axillary. Bushes, meadows, and rocks of the plains and the mountains.

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44. Linnæa.

(*PLATE XXIV.*)

We were only once favoured to see a bunch of these pretty drooping pinkish flowers in full bloom, and that was on the table of an hotel at Visp, when, in answer to our inquiries, we were assured they might be gathered in the neighbourhood; and so no doubt they might be, but it was not our good fortune to find them then. They are not very uncommon in some of the Swiss valleys, and we saw the plant afterwards at Sils (Engadine) in bud.

L. borealis (Fig. 44) is an evergreen plant of a shrubby nature, and trails along the ground with opposite, rather round, and rather crenate, stalked leaves. The flower-stems are three or four inches high, and terminate in two drooping flowers, white or rose-tinted. The calyx of the flower has five segments, and there is a kind of calyx to the fruit, consisting of four bracts, two of which are larger than the others. This calyx is at the base of the dry berried fruit which is crowned by the withered calyx of the flower. Stamens four, rarely five, two of which are longer than the others. Much loved by Linnæus, whence the name. Com-

mon in the forests of Valais, Schwyz, and the Grisons; Tête Noire, Valley of Roseg, and near Sils in the Engadine. So abundant is it in the neighbourhood of Pontresina that the woods are scented by it.

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45. Aster.

(PLATE XXVI.)

The name and shape of the Aster are very well known with us, but the only wild flower we have which approaches A. Alpinus (Fig. 45) is the Sea-Aster found in Salt-Marshes. The growth of this resembles its friends of the Swiss mountains, but its fleshy leaves, and something which reminds us of marshy ground, make it far less pleasing than the very pretty purple plant which adorns the high pastures of Switzerland. This plant has the form and colour of Michaelmas-Daisies, but is free from a certain commonness which marks them. The Asters belong to the Composite or Syngenesia family. The united florets of their yellow disc, or middle part, are all perfect, being furnished with stamens and pistils; those of the purple ray have pistils only; they grow on a one-flowered stalk, a foot or a foot and a half high, with alternate lanceolate leaves up the stem. The flowers are about two inches across, the lower leaves are spatulate, with more or less down-like hair.

45. *Aster Alpinus* .....ALPINE ASTER.

46. *Chrysanthemum Alpinum* .....ALPINE DAISY.

48. *Senecio incanus* .....RAGWORT.

The flower dries very badly. Common on the mountain-pastures of the Jura and the Alps.

The Erigerons, some of which resemble the Aster in colour, are smaller, and not nearly so pretty. Their purple has more of rose in it.

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46. Chrysanthemum, Pyrethrum, Leucanthemum.

(PLATE XXVII.)

By all these names is the plant known, which we may call the daisy of the high mountains, and which Mr. Robinson describes as reminding him of "a daisy with its petals down in bad weather;" only our daisies generally screw their petals together and hold them up in the wet, under which circumstances those of C. Alpinum (Fig. 46) look much more like a turn-down collar. It is larger than our Daisy, being about an inch across, with no tinge of pink, and more resembles the Chamomile in its growth; but the plant is stouter, the leaves are more solid and less finely divided, and the centre is yellow, not greenish-yellow. The calyx is imbricated with brownish scaly edges on the segments. It is very common on the mountain-heights, but

rather high ground must be reached before it is found: Alpes de Morcles, Furca, Cabanne de St. Vincent on Monte Rosa, Col St. Théodule, Mer de Glace, above Wengen, &c.

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47. Crepis, Hieracia, Leontodon.

(*PLATE XXVIII.*)

For by these various names do the plants go which have the general appearance of a Hawkweed or a Dandelion. They are puzzling plants to distinguish, as there are several of even the reddish colour, and many of the species depend on the difference in the achenes or seeds. The one figured, C. aurea (Fig. 47), is the one that will be the most probably met with of those that look like an orange-red Hawkweed, as it abounds in the higher pastures. The plant is about five or six inches high, having one, or very rarely two, flowers on the stalk, which is very often leafless. The flower is smaller than a Dandelion, with a calyx dotted with hairs. The leaves are smooth, toothed, rather runcinate. Rarer in the Jura than in the Alps.

47. *Crepis aurea* ....Allied to Hawkweed.

49. *Achillæa nana* .....Achillea.

48. Senecio.

(*PLATE XXVII.*)

Groundsel (S. vulgaris) is little prized, except by the owners of canaries; but there are many other species of Senecio, and much more handsome ones, in England.

The pretty S. incanus (Fig. 48) is not found wild with us, and only on high mountains in Switzerland. There its silvery-silky leaves, much and unequally divided, are mingled with the low patches of Gentian and Viola calcarata, in a way which no carpet-gardening can equal, while the blossoms, of an orange-yellow, rise about three inches above them. The flowers grow in a dense corymb, looking like a single head of blossom. Some of the florets have large petals, which give the plant rather the appearance of a head of Candytuft. Great St. Bernard, Chamounix, Jardin, Mer de Glace, Mont Buet, Mont Cenis, Mont Gotthard, Alp Glaronens, Pennino, Riffel.

49. Achillæa.

(*PLATE XXVIII.*)

This is not in general a very striking family, but includes the Yarrow, one of our commonest plants. A. nana

(Fig. 49) may be recognised by the dark scales of the inner florets, which give it the appearance of being dotted with black and white, the black prevailing. The flowers are in a compact corymb, with very hairy, downy, short stalks. The whole plant is four or five inches high, of a greyish colour, with pinnatifid leaves, all covered with soft down. High granite-mountains, near the snow: Valley of Saas, Great St. Bernard, Engadine, Riffel, Mont Cenis.

50. Artemisia.

(PLATE XXIX.)

Found in near neighbourhood with the last-mentioned plant is another of the pretty downy-leaved ornaments of the mountains; but A. glacialis (Fig. 50) has smaller and more thread-like leaves, which grow in a much-divided and palmate form, reminding one, though the plant is very much smaller, of two other members of its family, both very common in cottage gardens in England: Southernwood (A. Abrotanum), the favourite scent-giving plant of the village, and A. Absinthium, Wormwood, unhappily so much in request for making the dangerous absinthe. The flower of A. glacialis is small, at least in some of the varieties, bright yellow in colour, and in the form of a

50. *Artemisia glacialis* .....WORMWOOD.

51. *Gnaphalium leontopodium* .....EDELWEISS.

62. *Azalea procumbens* .....AZALEA.

roundish corymb. Like so many of the Artemisias, it is aromatic, bitter, and used in medicine. The Alpine shepherds, who know its sudorific properties, employ it in cases of chill. On high mountains, among schists, near the snow: Edge of the Cervin-glacier, Riffel, Glacier du Bonhomme, Mont Cenis, at Ronche.

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51 and 52. Gnaphalium.

(*PLATES XXIX. and XXXI.*)

This family comprises many of the plants known as Everlasting, and, though it is chiefly represented in England by the weedy Cudweeds which have little to recommend them, it includes one of the most typical plants of Switzerland, G. leontopodium (Fig. 51), round which a good deal of romance gathers. Who that has been among the high mountains there has not seen or heard of the Edelweiss, literally the Noble White? It is now so much sought after, that it is said laws are being made to prevent its extermination; and certainly, if the present rage for it continues, they will be necessary. Perhaps it is valued more for its peculiarity than for its beauty, though it is a handsome flower in its way; or, possibly, because it is found only at considerable heights, and a bunch of it in the hat speaks of mountain-expeditions. The great

charm of it, however, is that it will keep for years, and then look almost as well as when fresh gathered. The flowers grow in terminal heads, which have the appearance of yellow and black dots; but the remarkable thing about them is that they are imbedded in irregular bracteas, which spread round them in the form of petals, and give the flower a starlike appearance. These bracts are of various sizes, the largest about an inch long, and they look as if cut out of whitish soft flannel or felt. It is these specially that retain their appearance for so long a time. The lanceolate leaves are of a darker hue, and are also covered with a flannel-like down; the stems have often a touch of pink in them. It is said to grow from seed, and to be easily cultivated. Sunny Alpine pastures: Top of the Dôle, Mont Vergy, Great St. Bernard, Mont Chambrion, Valley of Bagnes, pastures of Grunberg, Valley of Saas, rocky pastures of Albula in the Engadine, Zermatt above the English church, Mont Trelod, Mont Cenis, above Lauterbrunnen. A correspondent of the *Times*, in answer to a remark of Mr. Bonar in his *Chamois-Hunting*, to the effect that, strangely enough, the Edelweiss grows in parts only to be reached with great danger, says: "The fact is, that I have met with the Edelweiss in almost every part of the Alps, from Dauphiné to the Dolomites, and, though no doubt it sometimes grows in places like those Mr. Bonar describes, I have been accustomed to gather it without difficulty or danger. Rugged,

broken, ground, at a height of from 6,500 to 8,500 feet above the sea, so far as my experience goes, is its favourite habitat. Still, though met with often in certain localities, it is, on the whole, a rather rare flower, and one does not generally expect to find more than three or four colonies of it in a month's walk." A correspondent of the *Garden* says: "We have walked over many miles of mountain-meadow with the Edelweiss always within sight, and to be gathered as easily as any other Alpine flower. It is, of course, necessary to ascend to a certain elevation to get the plant, but so it is in the case of scores of others, many of which are more difficult to obtain than this." The Rev. H. Smelt, of Wilcott Vicarage, Marlborough, in 1872, brought some in paper to Frankfort, where it was potted in German peat, and thus conveyed to England. It was there planted in the open ground, and the following year produced one bloom. The next year it had eleven, which stood in a fine circle round the plant, but Mr. Smelt doubted then whether the roots had extended beyond the German peat. These mountain-plants may last for a year or two, but very generally dwindle away and disappear, as if they pined for their clear mountain air and the long, steady, covering of snow which they can never have in this country.

G. dioicum (Fig. 52) is a pretty form of Everlasting, growing usually not so high as the Edelweiss, but like it drying well, its pink tips looking for years almost as pretty

as when they were first gathered. The brush-like centre of the flowers is surrounded by a petal-like calyx, or involucre, the scales of which are white in the barren, pink in the fertile, flowers. The leaves are whitish and downy, those of the root shorter than those on the stem. Common on dry sunny hills and pastures.

53. Homogine, or Tussilago.

(*PLATE XXX.*)

This plant has rather the appearance of a small Thistle, but, instead of the prickles with which thistles abound, it is soft and cottony on the stem and leaves. It belongs to the Coltsfoot family, though it does not resemble our common Coltsfoot in the curious way in which leaves and blossom appear at separate times. The leaves of H. Alpina (Fig. 53) are also very much smaller, and, although they have the same cottony web on the under-side, they are bright green on the upper. They are crenate and kidney-shaped, springing from the root. The stem has two or three downy, kind of scaly, leaves. The flowers are purple. Very commonly met with on mountain-pastures.

53. *Homogine Alpina* .....ALPINE COLTS-FOOT.

59. *Pyrola minor* .....WINTER-GREEN.

54. Arnica.

(*PLATE XXXII.*)

Among the mountain-pastures, but not until a considerable height has been reached, may be seen an orange-yellow flaunting flower, with its petals generally in disorder, and having somewhat the appearance of a small Sunflower. The stems are from one to two feet high, with one or two pairs of leaves on them, and bear a single flower, more rarely several, with a downy hairy calyx. The root-leaves surround the stem; they are smooth above, downy beneath. This, A. montana (Fig. 54), is the plant from which the well-known Arnica is made, so much used in cases of bruises and inflammation. The newly-gathered plant is sufficiently pungent to provoke sneezing. In some parts of Switzerland, near Mürren, for example, it may be seen lying in bundles under the broad roofs of the châlets to dry. The country people often use it instead of tobacco, and call it "the tobacco of the Savoyards." Maderaner Thal, Ormond-dessus, Pilatus, Valley of Urseren, Rigi, &c.

55. Phyteuma.

(*PLATE XXXI.*)

This family, which is scarcely represented in England, is found in Switzerland in great variety. It is divided into the plants which have the flowers in a roundish head, and those which have them in a spike. They are all of some shade of blue, except P. spicatum, which is more generally white. They may be easily recognised from having the buds of the flowers in the form of a tube bent and closed at the end. These open into five long segments, containing five stamens and a pistil cleft into two or three stigmas. Many of the species are very rare, but P. Halleri, about two or three feet high, with a spike of blue flowers, is found everywhere in the lower mountain-pastures, among the multitude of flowers that adorn them in the short time before they are visited by the mower's scythe.

P. humile (Fig. 55) is a little plant barely three inches high, with a rather large head, of from eight to ten flowers, amid the lance-shaped bracts which equal them in length. When the bent, sealed, buds of the corolla at length burst, they disclose the long protruding pistil, deeply three-cleft at the summit. The leaves are very narrow, an inch or two

52.

55.

52. *Gnaphalium dioicum* .....EVERLASTING CUDWEED.

55. *Phyteuma humile* .....RAMPION.

54. *Arnica montana* .....ARNICA.

long, the upper ones finely toothed. Granite-rocks of the Alps: Riffel, Monte Moro, Saas, Bernina, Valley du Foin in the Engadine.

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56 and 57. Campanula.

(PLATES XXXIII. and XXXIV.)

The Campanula is one of the best-known plants with us, from the Canterbury-bells of the garden and the favourite trailer over pots in windows to the Hairbell, claimed equally by England and Scotland, known and liked by everybody. We have many different wild kinds, but the two we have given below are not found wild with us.

C. barbata (Fig. 56) is a delicate pale blue, rather inclining to lavender, in colour; the flowers, which are larger than those of our Hairbell, hang noddingly up the stem, on somewhat long stalks, to the number of from four to twelve. It may be at once recognised by that which gives it the name—a fringe of pale hairs at the mouth of each segment of the petal. There are five of these, and five stamens. The plant is about a foot high, but may be double that in some situations. There are a few leaves up the stem; those of the root grow in a circle on short winged stalks, and are rough with short hairs. It dries very badly, like so many of its

family. Pastures of the Alps: Zermatt, Mont Trelod, Chaîne des Aravis.

C. Cenisia (Fig. 57) is in size and colour much more like the Hairbell, but very different from it in its growth. Found only among the very high mountains, it roots in some gritty chink, and flowers so thickly as to present a mass of blossoms, though each stem, which rises about an inch from the ground, bears only one. The flower opens rather broadly, and is somewhat deeply divided; the pistil is very prominent, with its threefold summit. The root-leaves are stalked, hairy, roundish, and the plant has many runners underground. Mont Cenis, whence it is named; on the heights of the granite Alps: Mont Fully, Proz de Bagnes, Saas-Valley.

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58. Arbutus.

(*PLATE XXXV.*)

When we think longingly of the wild flowers of Switzerland, it may console us to remember that we have two, and those very attractive ones, in which they are wanting, the Foxglove and the Heath. It is true there are Foxgloves in Switzerland, but they are yellowish, or cream-coloured, quite inferior to the noble purple spike which borders our meadows, and raises its head on our hill-sides and by the

56. *Campanula barbata* .....FRINGED HAIR-BELL.

57. *Campanula Cenisia* .....HIGH MOUNTAIN HAIR-BELL.

60. *Pyrola uniflora* .....ONE-FLOWERED WINTER-GREEN.

61.

64.

58.

61. *Rhododendron* .....ALPENROSE.

58. *Arbutus Uva-ursi*.....BEARBERRY.

64. *Primula viscosa* .....SMALL PURPLE PRIMROSE.

banks of our streams. This is found only in Swiss gardens, or when escaped from them. Nor have the Swiss any of our cross-leaved or common Heath; they have Erica carnea and plenty of Ling, but none of the Heather which gives such a beautiful tinge of purple to the Scotch mountains, and to lower hills in many parts of England. In point of colour, this want is supplied by the brilliant leaves of the Whortleberry, which give a red autumnal glow to the mountains when the pink Rhododendron is over and there are not even any straggling beauties left to remind the late traveller of what was once there. It is among the bushy thickets of these mountains that A. Uva-ursi (Fig. 58) is met with, forming a low and pretty shrub about the height of the Whortleberry, but, unlike that, having round perennial leafy, instead of wiry angular, stems, which become bare in winter. The leaves resemble those of Box in shape; they are leathery, downy when young, afterwards quite smooth. The flower is very much like the Arbutus of our shrubberies, with ten stamens, and a dark anther with five little turned-back teeth, on each blossom. The blossoms form a kind of loose bunch at the top of the branch; they are cream-coloured, with a pink tinge. The berry is large, very round, and of a beautiful red colour. Common on the rocky low mountains. A curious plant, near to the family of the Arbutus and Pyrola, Monotropa hypopitys, may be found among the dead leaves of the mountain woods. It

is entirely whitish cream-coloured, including its scale-like leaves, and puts one in mind of a Broomrape, or Bird's-nest Orchis. Wengen.

59 and 60. Pyrola.

(*PLATES XXX. and XXXIV.*)

None of these pretty plants are common with us, though all the three we mention are given as British species. They have five petals and ten stamens; the pistil in most of the species is very conspicuous. The most common, perhaps, is P. rotundifolia, the ten, or twenty, white round bells of which hang on a stalk about nine inches long, somewhat in the fashion of a Lily of the Valley, only rather more clustered at the top, a bract springing from each flower. The flowers are sweet-scented, with golden anthers; but the characteristic of the plant is its reddish style, which is trumpet-like in form and stretches beyond the stamens. The leaves are smooth, shining, roundish, and crenate. Common in moist woods, P. minor (Fig. 59) is distinguished from the above by its smaller size, its less-opened petals, which hang more like a bead, its much shorter style, and its more oval-toothed leaves. P. uniflora (Fig. 60) is known by the single flower which each stalk, from one to three

inches high, bears, and by a certain angular look about it. The style is nearly straight, green, with a broad five-lobed summit. The flower opens wide, and the protruding anthers lie in pairs on each petal. The leaves are roundish, or oblong, serrate, and rather thick. The flower has a sweet odour. The whole family dries especially badly. Alpine woods, St. Cergues (Jura), Pilatus, Maderaner Thal, Sembrancher in the woods of Mont Catogne, Zermatt, Gemmi, Lanslebourg, Engadine, &c.

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61. Rhododendrum.

(*PLATE XXXV.*)

Of all flowers, this (Fig. 61) is particularly the one which characterizes Switzerland. The mountain-guide eagerly points to its earliest blossom, and proudly places it in his hat, if he does not bestow it on the foreign lady whose horse, or whose mule, he is leading. Its presence always tells of a considerable height gained, and, on this account alone, it is welcome, did not its bright pink blossoms adorn many a mountain-range where even the fearless climber dare not venture. Its common name, Rose des Alpes, or Alpen-Rosen, must be given to it from its pink colour, for in no other respect does it resemble a rose; indeed, it is immediately known from its likeness to our cultivated rhododen-

drons, though it is smaller than most of them, forming a low shrub. R. ferrugineum has one petal, spreading, deeply divided into five lobes, of a rose colour, with a bluish tinge in it; the divisions of the calyx, which are covered with little glands of a yellow colour, are less marked. The ten stamens are yellowish, the anthers perforated with two pores. The flowers grow in terminal racemes at the end of the branches. The leaves are alternate, oblong, rather pointed towards the two ends, green, and smooth on the upper side, but when young with a bright yellow down beneath. This yellow changes into bright rusty-brown as the plant gets older; hence its second name. R. hirsutum much resembles the above, but is distinguished by the hairs on its branches, and the backs of the leaves are not yellow or brown. The flowers are smaller and lighter in colour. On Alpine granite-rocks frequent; on the Wengen-Alp abundant; less common on the Jura; sometimes found with white flowers.

62. Azalea.

(*PLATE XXIX.*)

We so much associate the Rhododendron and the Azalea together among our spring flowers, that it seems natural to do the same in Switzerland. A. procumbens (Fig. 62) is

63. *Primula Auricula* .....AURICULA.

one of the smallest of shrubs, its trailing branches rising about half a foot in height, thickly covered with the alternate evergreen leaves about the size of those of Thyme. These are leathery in substance, and rolled back at the edges. The small, pretty, pinkish, flowers grow in terminal clusters; they have five lobes to the corolla, and five stamens. A. procumbens is found in the Scotch highlands on the top of high mountains, and is sometimes called Loiseleuria. Rocks of the High Alps, chiefly those of the centre and west of Switzerland: Chamounix, Engadine.

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63 and 64. Primula.

(*PLATES XXXIV. and XXXV.*)

After all, in its way, there is nothing more lovely than a copse carpeted with the Primrose, that especially English flower. The delicacy of its inimitable colour and of its scent does not prevent it from giving a cheerful hue and fragrant odour to the budding wood, whose half-bare branches allow the sun to play across the long glades where the busy bee and the early butterfly are rejoicing once more in the sight of flowers. We all know Primroses and Cowslips so well that the very attempt to describe them seems to make difficulties, and perhaps the man was saved some vexation

who was content to go no further in his knowledge of the Primrose-family than what could be thus described:

> A yellow Primrose 'twas to him,
> And it was nothing more.

For that it is one of the families most given to vary, anyone may know who will watch the changed colour which so often and so soon comes to a common Primrose planted in a garden. Linnæus included Primrose, Oxlip and Cowslip in one species; but, though his name may thus be used to sanction some of the new views of species, these three do seem tolerably and constantly distinct. It would not, however, be easy to name several of the links which occur between them. The same remark will apply to the Primulas peculiarly Swiss, and this may occasion the different names given to the same species. It is not the thoroughly English species of the Primula for which Switzerland is remarkable, though that is found there; but we meet with species in abundance on the Swiss mountains which are unknown with us, or which are found only in some localities—as the pretty pink P. farinosa, met with only in the northern counties of England, and some parts of Scotland.

P. auricula (Fig. 63), so well known from having been a much-prized florist's flower, and from being now so much cultivated as a border plant, is well represented among the high Swiss mountains, where it appears soon after the melting of the snow. The stalk, rising three or four inches,

bears an umbel of several yellow flowers. The calyx is rather shorter than the tube of the corolla, which opens at the top into a flat spreading five-lobed limb; stamens five. It may be known, like all the varieties of the Auricula, from the plant being more or less covered with a white flour-like powder. The blossom is yellow; it is rarely found white. The leaves are roundish, oblong, fleshy, and rather crenate; they are very smooth, except for the white powder above mentioned. Calcareous rocks of the Alps and Jura: Mont Pilatus, Rocks by the Pont de la Caille, Mont Semnoz near Annecy, Pont de St. Clair, Col des Aravis, Dent de Nivolet near Chambéry.

P. viscosa (Fig. 64). This pretty little flower has so exactly the form of a small Auricula, that it may be recognised at once. Its rosy-purple blossoms, which are large for its size, form an umbel of from two to five on a stalk, not more than an inch or two above the leaves, and almost hiding them. The leaves are roundish, crenate, bordered with thick-set clammy hairs, and viscid on both sides, as are the calyx and stems. It keeps its colour when dried. Rocks of the high mountains: Alpes des Morcles, Vaud, Gorge du Trient in Valais, Mer de Glace, Dent du Corbeau, Valley du Foin in the Engadine.

P. farinosa is also very pretty, with smaller flowers, more in the cluster, and a longer flower-stalk.

65. Cyclamen.

(*PLATE XXXVII.*)

The Cyclamen is now so much cultivated in pots, producing such beautiful decorations for the early part of the year, and is moreover so peculiar in its shape, that it is well known as a florist's plant. But it is a new and very great pleasure to find it growing so freely in the woods, or up the mountain-side, as to make it possible to gather a nosegay of its sweet-scented blossoms as easily as a bunch of Primroses with us. All parts of the plant are pretty—its flower, its pink stems, its variegated leaves.

C. Europæum (Fig. 65) has five stamens; its one petal, after forming a kind of pentagonal ring at the mouth of the tube, spreads into five divisions, which look like distinct petals, and which turn back upon the calyx, thus giving the purplish-rose flower an appearance quite its own. The leaves are roundish, heart-shaped at the base, rather leathery, and toothed at the edge, prettily variegated with white on the upper side, pink on the under. After blossoming, the flower-stalks begin to turn spirally inwards, so as at length to bury the seed in the earth. Woods of the low mountains.

C. hederæfolium, so called from the ivy-like shape of its leaves, blossoms after the above. It has ten angles to its

65. *Cyclamen Europæum* .....CYCLAMEN.

66. *Pinguicula Alpina* .....BUTTERWORT.

68. *Gentiana nivalis* .....SMALL GENTIAN.

purple ring, while the spreading part of the petal is very often white. This species is found at Roche in Canton de Vaud, Grisons, Tessin, and near the Pont de la Caille at Allonzier.

66. Pinguicula.—Butterwort.

(PLATE XXXVIII.)

The flowers of this family have somewhat the look of the Snapdragon. The purple Butterwort is common in many parts of the north of England, Scotland, and Ireland, and abounds in Switzerland, where also a larger kind is found on the high mountains. P. Alpina (Fig. 66) resembles the blue species, and bears a single delicate flower on a leafless stalk about six inches high. The flower is yellowish-white, and has two yellow spots on the mouth. The two stamens are covered by the lips of the corolla, which is lengthened into a short conical spur. The leaves are oblong, of a pretty, tender, delicate, green, well described as looking as though oiled all over. The whole plant is fragile, it delights in wet, boggy, soil, and soon withers after being gathered. It is almost impossible to dry it satisfactorily. Marshy heights of the Jura and the Alps: The Dôle, the Reculet, Mont Grenier, Mont Cenis.

67, 68, and 69. Gentiana.—Gentian.

(PLATES XXXVIII. and XXXIX.)

This name brings us to some of the most beautiful and characteristic plants of Switzerland. At the same time, the Gentians are, at first sight, one of the families of which it is most difficult to decide the species, so many of them are there; so different in appearance are some from each other; while, on the other hand, others appear so hopelessly alike, that it seems a formidable task to attempt to name them. Their beauty consists not so much in their form, which has often too much of the angular about it for perfect beauty, but in the matchless colour of the blue species, unsurpassed by that of any other flower. The blue Salvia approaches it, but that looks as if its colour were so precious that it could afford only a little at a time, and its quickly-falling blossom gives a sense of incompleteness to it. Not so with a patch of blue Gentian, rising only two or three inches above the ground, their flowers opened day after day to the sun of their short summer, with a beauty and intensity of blue quite in keeping with the purity of the air and the dazzling whiteness of the snow, which is very likely close by them.

It is not difficult to decide on the general, broad, division of the Gentians. The prominent characters of the family are—corolla funnel-shaped, as in the yellow Gen-

67.

69.

67. *Gentiana verna* .....SPRING GENTIAN.

69. *Gentiana Bavarica*.....BAVARIAN GENTIAN.

tians; or tube-shaped, opening into a spreading limb, with five divisions, sometimes only four, and often five additional smaller lobes between the larger. The germen is usually very long, with scarcely any, or no, style; the divided stigma remains on it after the flower has faded. Stamens five, rarely four, not appearing above the tube of the corolla. Leaves alternate.

We have, first, the yellow, or yellow and dull-purple, Gentians, with their tubular flowers growing in whorls, very unlike most of the blue; they are coarse, not at all pretty, plants, growing from one to four feet high, and remarkable for the three to five-ribbed veins in their large, vigorous, somewhat oval, smooth, and pointed, leaves. It is these—and especially G. lutea, which must be called a handsome plant in spite of what has been said, with its whorled flowers and pleasant odour—that furnish the well-known Gentian-root, so valuable for its bitter, tonic, properties. In the mountain châlets, especially at Salève, they make of it a kind of Gentian-brandy, very strong, but whose great bitterness happily checks the use of it. There is a plant very common on waste rocky places, whose large and strongly-ribbed leaves may be easily mistaken for one of the large Gentians when it is out of bloom. Its green diœcious flower soon shows the difference. This is Veratrum album.

G. asclepiadea is of a beautiful blue colour, with an erect leafy stem a foot or two high, bearing many flowers

in spikes. It is not uncommon in mountain-meadows in the east of Switzerland.

In arriving at the Gentians which rise only a few inches from the ground, we have first of all G. acaulis, so well known as a cultivated plant, and frequently forming the edging of borders in English gardens. Its flower is the largest of all the Gentians, and has a wonderful depth of blue in it, with oblong markings down the throat, spotted with yellowish-green. Its five large lobes are divided by a kind of gusset. It does not usually grow in masses, but may be seen with its flowers, one or two together, among the grass on the mountain-side. The species cannot be mistaken, but there are various varieties, or sub-species, according to the more or less pointed lobes, the markings of the throat, and the greater or less change of the colour to yellow in drying. They all dry badly, however. G. Alpina is like a small variety of G. acaulis, but grows in masses instead of being isolated, and has a yellow-green tint in its colour.

We now come to the smaller Gentians; and here, indeed, it is often difficult to decide on the different species. It is G. verna (Fig. 67), and G. Bavarica (Fig. 69), that are perplexing. For situation often makes a difference in their growth and in the size of their leaves, and renders them more or less imbricated. Both are extremely beautiful; both keep their colour very fairly well when dried. Verna

is perhaps the most common, and has the widest range; Bavarica loves the snowy heights; but they may be found growing near to each other. Mr. Robinson tells us he saw both in great abundance near the monastery of the Simplon; both have the pretty white and blue lobes between the division of the corolla. The difference is said to be—that G. Bavarica has the style divided deeply, G. verna not at all; that the leaves of the former are more Box-like in shape, more yellowish-green, and more thickly imbricated on the stem; and that the plant forms denser tufts, of which Fig. 69, taken from a group gathered on the Riffel, may give some idea. The five white stamens cannot be seen, as the mouth of the tube is prettily filled by the expanded stigma. If the above distinctions could be depended on, there would be little difficulty in deciding the species, but they are probably all modified according to situation; and, after beginning—as an old attendant at the Botanical Museum of Geneva did, when asked the difference between Verna and Bavarica—with "Oh, they are very easy to be distinguished," and failing, as he did, to make the distinction very clear, we may be glad to ask the situation in which the plant was found; for another of the distinctions between them is that Verna loves dry ground, Bavarica spongy boggy spots, where some rill saturates the ground.

G. nivalis (Fig. 68). In walking along the high Alps or the Jura, the eye may be suddenly caught by something which

flashes out like a blue gem, lost in the grass. This is G. nivalis, of the same shape as Verna and Bavarica, scarcely half an inch across when fully expanded, but of a brilliancy which it is impossible to describe. It does not grow in tufts; sometimes a little stem will arise singly from its root, standing all by itself; sometimes several stems will branch out from the root or from some central stem, the whole not rising more than about two inches, each branch terminating in a flower, the calyx of which reaches up about three-quarters of the tube. All the above three are found on high mountain broken ground, and pastures. Perhaps G. verna descends the lowest.

There is another division of Gentians, distinguished by having a hairy fringe in the mouth of the tube—as G. Campanula and G. campestris, and especially the beautiful G. ciliata, which is like a G. verna fringed, and blossoms late.

70. Lithospermum.—Gromwell.

(*PLATE XXV.*)

Though by no means equal in colour to the Gentians, L. purpureo-cœruleum (Fig. 70) is of a very pretty blue, with a touch of pink in it. The tube of the corolla is much longer than the hairy, deeply five-cleft, calyx. The corolla expands into a five-lobed limb, with five little swellings

41. *Bupleurum ranunculoides* .....FALSE RANUNCULUS.

71. *Myosotis Alpestris* .....FORGET-ME-NOT.

74. *Androsace carnea* .....PINK ANDROSACE.

opposite the five stamens, which are concealed in the tube. The stigma is small, divided in two. The seed is white, nut-like, shining, and very hard. Plant a foot or foot-and-a-half high, leafy, the flowering stems ending in a loose cluster of a few flowers. The branches that do not flower root easily at the end. Leaves lanceolate, veined, and hairy. Commons, hedges and woods of the lower grounds.

71. Myosotis.—Forget-me-not.

(*PLATE XL.*)

The Forget-me-not is too well known to need description, but both in our own country and in Switzerland a great many needless divisions seem to have been made; for no doubt the same plant varies considerably according to situation. The general characters of the family are—a one-petalled corolla, with five divisions to the limb, the mouth having five small valves, and a yellow edge round the tube, within which are the five stamens. The flowers are generally blue, they usually grow up the stem in a long, sometimes forked, cluster, and in many cases the end of the stalk, with the unopened buds, is curled round. They have more or less hair about them. M. sylvatica will probably be the Forget-me-not most frequently met with; it has

much the growth of that so common in our gardens in spring, and is probably nearly the same, but there is brilliancy in the rather light blue of its flowers as seen in Switzerland that makes it look like a string of sapphires. It is somewhat the colour of the Lake of Geneva. The flowers are on short stalks; the lower leaves spatulate, those on the stem sessile and oblong. Mountain-woods and meadows.

M. Alpestris (Fig. 71). We have said that the various forms of Myosotis seem to run into each other; but M. Alpestris may be distinguished by having its flowers in a flatter head, so as somewhat to resemble the blossom of the Heliotrope; by the numerous hooked white hairs of the calyx, which give the plant a silvery look; by its deep blue colour; and its low growth. It is said to have a sweet scent. On the high mountains: Pilatus, Mont Cenis, Little St. Bernard.

72. Eritrichium nanum.

(*PLATE XLI.*)

This little plant (Fig. 72), from its rarity and beauty, may truly be called one of the gems of the Alps. Its flowers are very much like those of the Forget-me-not—

73.

72.

72. *Eritrichium nanum* .....ERITRICHIUM

73. *Androsace Heerii* .....ANDROSACE HEERII.

indeed, it is sometimes called M. nana—but larger than the largest of them, and with a golden eye. They grow in a few-flowered spike, with dark bracteas between them. The whole plant, with its thickly-matted, narrow, lanceolate, leaves, rises scarcely more than an inch above the ground. It looks like a patch of Silene acaulis, or Androsace Heerii, in blue instead of pink. Rare; on the heights of granite-mountains of Valais, Tessin, Saas, Zermatt, Bernese Oberland, Mont Cenis, Engadine.

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73 and 74. Androsace.

(PLATES XL. and XLI.)

A most beautiful and interesting Swiss family, principally found on very high ground. Whether it be that the species are rare, or that they have not been sufficiently well studied, there seems considerable difficulty in making them clearly out; they are set down at a dozen or more. There are five divisions to the limb of the petal, which is rather contracted at the throat; stamens five. The flowers sometimes grow in a few-flowered umbel; sometimes they are sessile, or on very short stalks, and quite cover the foliage. The leaves are narrow, and very often in the form of little rosettes. A. Helvetica, Mr. Robinson says, "forms close cushions, about half an inch high, of diminutive ciliated

leaves closely packed in little rosettes. Each rosette rests on the summit of a little column of old brown and dead, but hidden half-dried and persistent, leaves." When these rosettes are a silvery white, the plant goes by the name of A. tomentosa, from the white hairs which cover it. The little, almost sessile, flower springs from the middle of the rosette. It is white, purple in the tube and at the throat. A variety with rose, or deep purple, goes by the name of A. minor. Zermatt.

A. Heerii (Fig. 73). This is closely allied to A. Helvetica, but is known by its pretty pink flowers, *which become blue in drying*, and which usually spring almost sessile from the side of the stem. At first sight it looks like a patch of the Moss-Campion, but it is even more beautiful than that, though its colour is nearly the same. It may be distinguished therefrom by having its petals joined in a tube, with five instead of ten stamens, and not having such finely-divided leaves. The leaves are thickly imbricated on the branches, more in the style of the Stonecrops. The flower also lasts much longer than that of the Moss-Campion, which withers very quickly, while we have seen little patches of the blue Gentian, and pink Androsace, open their bright blossoms to the sunshine days after being gathered. High on Alpine mountains: the Riffel. Our coloured plate may give some idea of it.

A. carnea (Fig. 74) is perhaps not quite so pretty, but

still it is a charming little plant from the contrast between its greyish leaves, growing not in rosettes but in tufts, and its delicate pink flowers, which form a very short umbel springing from the top of a stalk two inches high. Mont Fully, rocks of granite Alps: Ronche, Great St. Bernard, Riffel.

A. lactea is much more commonly found, and at lower heights; it lasts and dries fairly well, like many of the rest of its family; springs from rosettes, but on branches of from two to three inches high; is of a pure ivory white, with a yellow throat; and has at first sight the appearance of a Saxifrage. It is, perhaps, the most common of the Androsaces. Found abundantly on the Jura, Engadine, Alps of Dauphiné, &c.

75. Aretia.

(PLATE XLIII.)

Aretia, Primula, Androsace, or Gregoria Vitaliana, (Fig. 75), for it goes by all these names, has not much the appearance of an Androsace; for the tubes of its flowers are longer, and the limb does not open widely, so as to conceal it. Tiny as it is, it is shrub-like in its nature; its brown half-woody branches straggle along the ground,

and throw up little tufted rosettes of linear pointed leaves, more or less clothed with hair. The flowers spring singly or in pairs from these rosettes, almost sessile, but with a long calyx, with five pointed lanceolate divisions, reaching about half-way up the tube; stamens five, as also the lobes of the corolla, which is a bright yellow, becoming green by drying. From the same little tufts a new branch will often spring, giving the plant a forked appearance. Rare. Summits of granite-mountains: Ronche, Little Mont Cenis, Riffel.

76. Soldanella Alpina.

(*PLATE XLII.*)

Scarcely any flower is more characteristic of the Alps than this (Fig. 76). It does not rival in colour some we have just mentioned, but in the prettiness and delicacy of its growth it is equal to any of them. It has five stamens, and five divisions to its short calyx. The flower is in the shape of a bell considerably smaller than our common Hairbell, and not rounded as that is at the stem, but going down almost angularly into the calyx. It may be recognised at once from having the edge not fringed with hairs, but cut into irregular strips, a quarter or half-way up the flower. The

76. *Soldanella Alpina* .....SOLDANELLA.

77. *Veronica saxatilis* .....SPEEDWELL

flowers grow two or three together, at the end of a pinkish stalk from three to six inches high; they are of a very pretty purplish-blue colour. The leaves are roundish, or kidney-shaped, and leathery, about the size of a shilling, on long stalks, spreading from the root, of a pretty bright green. The Soldanella appears soon after the melting of the snow, and may be seen with its flowers peeping through the white mass. Sometimes varieties are made according to the number of the blossoms, or the length of the style, but the plant seems to be nearly the same. In moist places on the Jura, and Alpine mountains, delighting in turfy soil: Glacier du Rhône; Dôle; Colombier; Reculet; Mont Semnoz, Mont Méry; Little St. Bernard.

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77. Veronica.—Speedwell.

(*PLATE LXII.*)

There is a temptation to pass by this family, as too well known and easily distinguished by the two, and only two, prominent stamens which are its characteristic mark. But, the family known, the individual is often difficult to distinguish. Bentham gives sixteen, and the Swiss botanists make about twenty-five, species. Some of the leading distinctions depend on whether the flowers are in terminal or

lateral spikes, or whether they are in spikes at all, but grow one, or two, axillary. Also the divisions of the calyx furnish another mark of distinction, according as it has four or five. Some Veronicas are among our commonest flowers. V. Chamædrys is scattered everywhere along the hedgerows and banks, its pretty blue blossom having only one fault—that of falling off too quickly. The general characters of the family are—calyx with four or five divisions; corolla blue, sometimes pink, with short tube, the limb deeply divided into four, the lowest division the smallest; stamens prominent.

V. saxatilis (Fig. 77) is of very pretty growth, its spreading, half-woody, branches having many small smooth leaves not unlike those of Thyme. The flowers are borne, in number from two to seven, at the end of a stem three or four inches long, with opposite leaves. They are fully half an inch across, rivalling those of the Gentian in colour, with a very short tube. They may be distinguished by the great prominence and whiteness of the anthers contrasted with the deep blue of the petal, and by a circle of red round the mouth of the tube. The style is nearly as long as the stamens, but with an inconspicuous stigma. On high mountainous rocks: Crêt du Miroir, Jura; Col des Aravis; Maderaner Thal; Mont Cenis.

78. Linaria.—Toad-flax.

(*PLATE XLVIII.*)

The Snap-dragons are among the favourites of children, and we have heard of those who opened their mouths and fed them with pieces of bread—a more satisfactory thing than that of holding bread to the lips of dolls, as no doubt it disappeared in the mouth of the flower. These flowers often ornament old walls, nor will they refuse those that are in the midst of the city. The Linarias differ from the Antirrhinums only in having a spur; of these the pretty yellow Toad-flax, with its sulphur-coloured petal and deep orange mouth, is a well-known example.

L. Alpina (Fig. 78) is decidedly one of the prettiest of its family, though not so large as the yellow Toad-flax. Its light brittle stems straggle over the stones left by the mountain-stream, or glacier, clothed with smooth glaucous linear leaves, the lower ones being four together. These leaves are almost covered by the flowers. The calyx has five rather deep divisions; the four stamens, two long and two short, are covered by the lip of the corolla, which is tubular in form, swollen, prolonged into a spur at the base, and shut at the other end by a two-lipped mouth, the upper lip of which is long, split into two; the inferior has three lobes, and is furnished with a palate. This lip is of a bright orange; the

rest of the flower is a beautiful purple, forming in the mass vivid patches of colour. Sometimes specimens are met with in which the orange is wanting, the plants being in all other respects the same. Stony, gritty, places on mountains, sand of rivers : Pilatus, Maderaner Thal, &c.

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79 and 80. Pedicularis.

(*PLATE XLIII.*)

These, if not among the most beautiful, are among the most striking and interesting forms that are met with on the Alps. They are easily recognized by their inflated calyx, and by their peculiar leaves. These leaves are much divided and subdivided, and are also wrinkled, in the style of the Primrose-leaf, but the wrinkles are more tumid and clammy-looking, and the leaf is much darker, having a kind of pink mixture in the green. These leaves often take the form of bracts at the base of the head of flowers, or mixed in with them. The general character is—calyx inflated ; corolla two lipped, the upper lip arched in the form of a helmet and sometimes terminating in a long beak, the lower flat, and three-lobed ; stamens four, two long, two short. The great division of the family depends on whether the upper lip is beaked or not. Of the latter, beside our own Marsh and Wood-Lousewort, which are pretty plants, perhaps the most

75. *Aretia Vitaliana* .....ARETIA.

79. *Pedicularis verticillata* .....WHORLED PEDICULARIS.

80. *Pedicularis rostrata* .....BEAKED PEDICULARIS.

common is P. verticillata (Fig. 79), the flowers of which form a rather dense circular head more than an inch across, of a purplish-rose colour. The plant is about six inches high, with an angular stem. The leaves are unequal in length, but form a kind of whorls round the stem, instead of being alternate as in most of the other species. The leaf-like bracts are mingled with the flowers. Not uncommon in Alpine pastures.

Among those without beaks P. recutita is remarkable for its handsome size, its very dark rusty-purple colour, an arched gaping upper lip, bluntly toothed, and a prominent style; flowers in a compact head, with bracteal leaves at the base. Not unfrequent in moist places of the Alps: Glacier of the Rhône; meadows of Pontresina, &c.

P. versicolor is much smaller, cream-coloured, distinguished by a reddish-purple spot on each side of the upper lip; plant from two to five inches high.

We come now to the beaked Pediculares. P. rostrata (Fig. 80) is plentiful on the high mountains, but one must ascend very high before it is seen; it rises three or four inches above the ground on somewhat straggling stems, which terminate in a loose head of a few flowers; the lower lip of these is of a pretty rose, while the long beak of the upper is of a chocolate-purple. The leaves are pinnatifid, and again divided. The beak at once makes the plant known. Riffel; Ronche; Great St. Bernard.

P. tuberosa is a cream-coloured beaked species, with a prominent style; not uncommon. P. incarnata is a handsome plant from nine to eighteen inches high. The stem is leafy; the leaves are deeply divided, and look almost like those of a small fern. The flowers are in a long rather loose spike, bright rose colour, with a long beak of a darker shade, and rather cut off at the end. Rare. Monte Pennino, Ronche, Great St. Bernard, Zermatt. They all turn black in drying.

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81. Salvia.—Sage.

(*PLATE XLIV.*)

Well known as the common Sage of our kitchen-gardens, and as the scarlet and blue ornaments of our flower-beds. The family is distinguished from all the other Labiatæ (two-lipped flowers) by its singular stamens. There are properly only two, with very short filaments; these filaments bear on them at right angles a kind of tube, at one end of which is a perfect anther, the other, which hides itself in the lower lip, having nothing, or a deformed abortive cell.

S. pratensis (Fig. 81) is found abundantly in France, but it is scarcely known in England; its flowers grow in a long spike of leafless whorls, about six in a whorl, of a fine blue, sometimes purplish, colour. Calyx with short bracteas and

81. *Salvia pratensis* ....MEADOW SAGE.

83. *Polygonum viviparum* .....VIVIPAROUS POLYGONUM.

two lips, the upper with three, the lower with two, teeth ; style very prominent and two-cleft. The leaves are large, oval, lanceolate, irregularly crenate at the edge, very much veined and wrinkled, bright green above—with a pinkish middle vein, broad at the base of the leaf—and light-coloured and hairy beneath. Very common in meadows and by road-sides.

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82 and 83. Polygonum.—Persicaria.

(*PLATES XLV. and XLVI.*)

"Be sure you look out for my pink grass," said a friend on hearing of our going to Andermatt ; so of course, though it happened to be pouring wet the day we were there, we made a point of getting this "pink grass," which was abundant in the meadows, but which turned out to be no grass after all. It was, however, not difficult to mistake it for such, as its pretty pink spikes were seen about the same size and height amid the grasses waving around it. The Polygonums have no corolla, but a coloured calyx with four or five divisions that looks like one; the stamens vary, being from five to eight ; styles two or three.

P. Bistorta (Fig. 82), or Snake-weed, the twisting of the root giving rise to the name, is a handsome plant from one

to three feet high. The flowers grow in a densely-crowded spike about two inches long. They are of a very pretty pink colour, with lead-coloured stamens, reaching beyond the divisions of the calyx; styles three. There are also numerous stipules, or membranous bracts, which give the plant an awned appearance, and assist in its resemblance to "pink grass." Leaves bright green on the face, white beneath, the lower ones oblong, stalked, rather winged, the upper pointed and sessile. Meadows, and fertile mountain-pastures.

P. viviparum (Fig. 83) is a more slender plant, and has a much thinner spike than the above, one or two inches long. It is also remarkable as always seeming incomplete, for the lower part of the spike consists of a number of little pink bulbs, looking like seeds, by which the plant propagates. At the top are some white or pinkish flowers with from six to eight stamens, and three prominent styles, mixed, as are the little bulbs, with membranous bracts. The bottom-leaves only have long stalks, with brown sheaths nearly entire, and revolute margins; the upper are lanceolate and sessile. Sunny pastures of the Alps and Jura.

Almost all the Persicarias are pretty from their colour, though many of them are among our most troublesome weeds. Some are cultivated: as the Buckwheat, P. Fagopyrum.

85.

82.

82. *Polygonum bistorta* .....BISTORT.

85. *Orchis Nigritella angustifolia* ...BLACK SCENTED ORCHIS.

84.

87.

84. *Daphne Cneorum* ....DAPHNE.
87. *Crocus vernus*.....CROCUS

84. Daphne.

(*PLATE XLVII.*)

The Mezereum, one of this family, is welcomed among the earliest flowers of spring, but its bare branches do not add to its beauty, and its colour has a dulness about it. D. cneorum (Fig. 84) is a much more elegant shrub, about a foot high, its brown, often straggling, branches bearing heads of from twelve to twenty short-stalked blossoms, closely packed together, surrounded by the rather small, smooth, shining, leathery, lanceolate-eliptical, leaves. The flowers have no corolla, but a coloured corolla-like calyx, consisting of a long horn-shaped tube opening into four segments, not very deeply cut, which therefore give the blossom an angular look. Stamens eight, with scarcely any style. The flowers are purple-rose colour, and have a very sweet scent. The berry is orange. Rocks of the Jura, Maderaner Thal, meadows of the Eastern Alps.

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85. Orchis Nigritella.

(*PLATE XLVI.*)

Switzerland is not remarkable for Orchids, though most of those that are known in England can be found there, and

it has some we do not possess. The fanciful form of the plant is well known, with the peculiar way in which many of the species grow, as though living on air. Some seem to be very dependent on soil, and will only flourish on chalk or limestone. The flower is very remarkable. It has three sepals and three petals, the third of which is often unlike the others, being lipped, and sometimes spurred. The three stamens are combined with the style, forming a column, but the two outer of the stamens are generally abortive. The stigma is "a viscid space in front of the column."

N. angustifolia, or Orchis nigra (Fig. 85), is an orchid with a short spur, very dark in colour—purple-black—and having a sweet smell of vanilla. The flowers grow in a dense head, with coloured bracteas longer than the flowers. The lower leaves are lanceolate, the upper linear, all rather grass-like. Mountain-meadows, not uncommon. This must not be confounded with Burnet, Sanguisorba officinalis, which abounds in the meadows of the Engadine, and is of the same beautiful dark colour, but different in almost every other respect, except perhaps a slight resemblance in shape.

Serapias longipetala, a very handsome Orchis, with four or five large chocolate or purple-chocolate flowers in the spike, and large coloured bracteas, is found on the uncultivated hills and mountain-meadows of Tessin. The Cypripedium, almost extinct in England, may be found at Creux du Vent, at the foot of Chaumont in the Jura; Salève, between Col-

78. *Linaria Alpina* .....ALPINE TOADFLAX.

80. *Maianthemum bifolium*..... ..TWO-LEAVED SMILACINA.

97. *Allium ursinum* .....GARLIC.

longe and Pommier; foot of the Voirons; Wood of Barioz, near Annecy; Mont Brizon, near Bonneville; Apremont, near Chambéry.

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86. Maianthemum (Convallaria).

(PLATE XLVIII.)

We can scarcely call the Lily of the Valley the ornament of our woods, though it is plentiful in some counties of England, growing by acres near Brigg, in Lincolnshire;* and the Solomon's Seal is very rare indeed. Still rarer is the pretty little allied plant M. bifolium (Fig. 86), which abounds in the Swiss woods. Its stem, four or five inches high, bears two alternate leaves, very deeply heart-shaped, on short stalks, ending in a raceme, about an inch long, of very small white flowers, stalked, with tiny bracteas, four or six stamens, and four or six divisions to the perianth. The berry is small red. Mountain, especially fir, woods: Pilatus, Maderaner Thal, &c.

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* In the Lily Woods, the property of the Earl of Yarborough.

87. Crocus.

(*PLATE XLVII.*)

The Crocus is not one of the plants that are improved by being found in Switzerland; it is indeed scarcely wild in England, except near neighbourhoods where it has been cultivated, and we form our ideas of it from the many pretty kinds now so abundantly seen in gardens. The shape of the flower is very well known. It has six long petal-like segments, to three of which the three stamens are fixed, the arrow-shaped anthers being often nearly as long as the filaments. These segments unite in a long sheathing tube, which runs down to the root, the germen, which is on the bulb, and the long style, ending in short orange stigmas. C. vernus (Fig. 87) has white or purplish blue flowers, hairy at the mouth. A few leaves, very narrow and with a white vein running down them and reaching halfway up the flower, rise with it from the bulb, the whole surrounded at the base with a tubular sheath. On mountain-pastures, immediately after the snow has melted; but the plants have rather a thin and starved look, though they carpet the ground. They are more luxuriant when they take possession of a valley-pasture.

88. *Colchicum autumnale* .....COLCHICUM.

88. Colchicum.

(*PLATE XLIX.*)

If the Swiss Crocus has rather a mean look, not so with the Colchicum, which sometimes fills the meadows with its pretty light lilac-purple blossoms. Its appearance is exactly that of a Crocus, but it may be distinguished from that by having six stamens instead of three, inserted in the throat of the tube, and three very long styles.

C. autumnale (Fig. 88). A great peculiarity of this plant is that it blossoms in the autumn, entirely destitute of leaves, the root sending up one or more flowers. The leaves appear afterwards, and attain the length of eight or ten inches in the spring, being an inch or two broad. Very curiously, too, the seed appears with them in a capsule, making one wonder what plant can have just gone out of blossom. Our illustration shows both. Moist meadows of the lower grounds. C. Alpinum is much smaller, and the root bears only one flower.

89. Narcissus.

(*PLATE L.*)

The Narcissus poeticus, that which we commonly call the Narcissus, can scarcely be said to be known with us otherwise than in gardens, but it may be seen adorning the Swiss meadows as freely as Cowslips do those of our own country. The earliness of its bloom, however, prevents many visitors from enjoying this sight. We were once on Pilatus as soon as the snow allowed horses to pass, and could only obtain some of the lingering blossoms. The flower is recognized by its six long white petal-like sepals, which come, usually singly, from a brown crinkled kind of sheath on a two-edged stalk, and surround a crown occupying the middle of the flower, yellow—with a crenated edge of bright scarlet. The six stamens, three alternately shorter than the others, are within the crown. N. biflorus (Fig. 89) differs from the above by having generally two flowers instead of one in the sheath; its crown is yellow, without any scarlet border, and the flower is a pale yellow rather than white. The stem has two angles; the leaves are about a foot long, half an inch wide, of a bluish green, and keeled. Moist and shady meadows: Geneva, near Sierne; Seduni, Valais.

89. *Narcissus biflorus* .....Two-flowered Narcissus.

90. *Paris quadrifolia* .....HERB-PARIS.

90. Paris.

(*PLATE LI.*)

We cannot rank this among beautiful plants, but it is so very curious, and, while scarce in England, so abounds in some of the Swiss woods, that it seems to demand notice. There is only one species, P. quadrifolia (Fig. 90), which rises about a foot from the ground, and then has four large leaves, equal to each other, three or four inches long and two or three broad, in the form of a Greek cross. From the middle of these, at a distance of an inch or two, the flower-stalk produces a green flower, consisting of four broader and four narrower segments, an inch or more long. Stamens eight, with linear anthers; styles four, purple. Sometimes all the parts of the flowers are in fives, instead of fours. Berry of a violet-black. Woods and shady places: Pilatus, Maderaner Thal, &c. The name Paris is given to it on account of the *equal* division of its parts. It is also called True-love.

91 and 92. Lilium.—Lily.

(*PLATES LII. and LIII.*)

This family, so well known by its six stamens, its large flower, and its broad open sepals, is one of the greatest ornaments of our gardens and our greenhouses, but we do not find it wild. It is, however, so easily recognized, that great is the pleasure of meeting it among the grass and the scattered rocks of the mountains. The plants do not grow in masses, but spring up here and there, one catching the eye beyond the corner of a rock, another perhaps being tantalizingly out of reach, and where it may be far safer not to venture after it. L. Martagon (Fig. 91) is from two to five feet high, with three or four flowers on rather short stalks, nodding toward the top of the stem, their six long and narrow sepals rolled back, giving it the appearance whence arises its common name of Turk's Cap. It is not nearly so handsome as many which go by that name, as the colour is a rather dull reddish-purple, marked with darker spots; though redeemed from commonness by its bright scarlet stamens. The leaves grow from five to eight in a whorl, with one or two at the base of each leaf-stalk. Woods and meadows of the Jura and Alps, to the height of five thousand feet: Maderaner Thal, Sils in the Engadine.

L. bulbiferum (Fig. 92) is a gorgeous flower, its six scarlet sepals two or three inches long, which do not turn

91. *Lilium Martagon* .. ..TURK'S-CAP LILY.

92. *Lilium bulbiferum* .....TIGER LILY.

back, are sometimes flashed with yellow in the middle and spotted with a darker, and kind of fleshy, or hairy, spot. A channel runs down the middle of the alternate three, and they all narrow towards the centre. The filaments are almost the same colour as the flower, with darker anthers, and so is the sturdy pistil with the deeper-coloured stigma. It is much like the Tiger-Lily of our gardens. The leaves are scattered and sessile, three or four inches long, numerous, pointing in different directions, and sometimes with a little bulb where they spring from the stem, in the axil. Rocks and woody places in the mountains: Valais, Neuchâtel, Grisons, Tessin, Maderaner Thal, Aigueblanche in Tarentaise.

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93. Liliastrum.

(*PLATE LIV.*)

Anthericum Liliastrum, Paradisia Liliastrum, or Czackia Liliastrum album (Fig. 93)—for it goes by all these names, and is also called, with us, St. Bruno's Lily. This pretty and delicate plant is nevertheless tall and conspicuous, as its slender stalk rises some two feet high amid the grass, and bears at the end, on short stalks with bracteas longer than themselves, from three to five large pure

white flowers, something like the white Lily of our gardens, but much smaller and more frail. The stamens, unequal in length, and pistil are yellow. Generally only two or three flowers are open at the same time; when they begin to fade they very soon wither and shrivel up. The scent is sweet. The leaves spring from the root; they are very narrow and long. Mountain-rocks and pastures.

94. Lloydia.

(PLATE LV.)

Lloydia serotina, or Anthericum serotinum (Fig. 94), a pretty little flower which is classed by some as an Anthericum, to which the last Lily belongs. It has a bulbous root, and grows from three to five inches high, bearing a single flower with six segments, and six yellow stamens, inserted at the base of the flower. The segments are white within, petal-like, and marked with from one to three reddish-purple lines, being purple at the base without. The root-leaves are very long, thread-like, and half cylindrical, those of the stem shorter and linear. It has been found on the Welsh mountains, but is very rare there. In pastures on the top of the Alps: Great St. Bernard, Mont Cenis, Riffel.

93. *Liliastrum or Anthericum album*.....St. Bruno's **Lily.**

94. *Lloydia serotina* .....MOUNTAIN-LLOYDIA.

95. *Gagea Liottardi* .....YELLOW GAGEA.

100 *Stipa capillata* .....FEATHER-GRASS.

95. Gagea.

(PLATE LV.)

Gagea Liottardi, or Ornithogalum fistulosum (Fig. 95). This plant very much resembles the common Star of Bethlehem, and, indeed, used to be classed with it, though now separated into a family called Gagea, distinguished from the other by the yellow colour of its flowers, and by having the six stamens thread-like, not flattened as in the Ornithogalum. The Gageas have roots with one, two, or more bulbs; two, or only one, root leaves, long, reaching beyond the head of blossoms, which grow in a kind of umbel of from one to five flowers, with two bracts, sometimes even three, at its base; these bracts are leaf-like, unequal in length, and longer than the flowers. The species seem to have been unnecessarily multiplied, depending on whether there are one, two, or three bulbs to the flower, one or two root-leaves, or on the number of the involucral leaves. G. Liottardi, though spoken of as having only one root-leaf generally, has been found with two, and appears to be the same as that described under the name G. fistulosa. There are two, or three, bracteal leaves, with an umbel of from three to five flowers, the flower-stalks woolly. Pastures of the high mountains: Zermatt, La Tournette near Annecy, Mont Grenier near Chambéry.

96. Ornithogalum.

(PLATE LVI.)

The Star of Bethlehem is the most commonly known representative of this family, one which is not particularly striking. The same cannot be said of O. nutans (Fig. 96), which, when seen in its perfection, is one of the loveliest of flowers; not so much from its colour, which has been described as watery white, with a belt of green on the back, but this is so mixed and softened as to produce a far more pleasing effect than is found in the Star of Bethlehem. The flower is large of its kind; it grows up a stalk about a foot high, on little stalks about an inch long, with a membranous bract at the base of each, and at length bends down. The six sepals, each an inch long, enclose six broad petal-like filaments ending in two points which have the anther between them, the three alternate smaller. Leaves channelled, rather long, not half-an-inch wide. In orchards and meadows: neighbourhood of Geneva, Compesières; Neydens; Nyon.

97. Allium.—Garlic.

(*PLATE XLVIII.*)

There is no need to give a distinguishing mark for this family, for the smell of onion at once stamps it. But, as the flowers of many of the species are exceedingly pretty, and as the smell is generally stronger in some other part of the plant than in them, they will be often gathered eagerly by those to whom they are not known. The general character of the family is—plants with flowers in terminal umbels or heads, sometimes of quite a globular shape, with two, or more, scaly bracts or sheaths at the base. Sometimes little bulbs are mixed with the flowers. The corolla has six segments, distinct from the base. In some of the species three alternate stamens are broader and divided into three at the top, the middle point bearing the anther. The root is a bulb. They are subdivided according to the equal or unequal stamens, the roundness or flatness of the leaves, and the absence or presence of little bulbs in the flower-head.

A. ursinum (Fig. 97) is about a foot high, with an umbel, two inches or more across, of beautiful snowy-white flowers, and with rather a pleasant smell, far different from that of the other parts of the plant when rubbed or bruised. The

flower-bracts soon fall off, there are no little bulbs, and the stamens are all equal. Leaves thin and flat, lily-like, and embracing the stem with their winged stalks, not nearly equal in length to the flower-stalk. Not uncommon. Woods of the plains and the mountains. Many of the Alliums are of a beautiful rose or purple colour.

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98. Luzula.—Woodrush.

(PLATE LVI.)

The Woodrushes are more like Grasses than Rushes, both in their leaves and in their growth, but they have six stamens instead of the three that usually mark Grasses, and their heads of blossom are flatter.

L. nivea (Fig. 98) is perhaps one of the most pleasing; for, whereas the colour of most of them is yellowish or brownish, this is a pretty white, though the divisions are scaly, and it has more distinct flowers than many of the Woodrushes. The plant is slender and elegant, the stalks being very thin, and the leaves narrow. At a foot or a foot-and-a-half high the stem breaks into a kind of umbel, with little stalks

96 *Ornithogalum nutans* .....DROOPING STAR OF BETHLEHEM.

98. *Luzula nivea* .....WHITE WOODRUSH.

99. *Poa vivipara* .....VIVIPAROUS POA.

of very unequal length, and often dividing again, and ending in a corymb of flowers. At the base of the umbel rises at least one long sheathing leaf, with long silk-like hairs, and reaching far beyond the heads of blossom; there is often also a smaller leaf at some of the subdivisions of the corymb, and, if not a leaf, more or less of scales. The leaves are long and narrow. Woods of the plain as well as those of the mountain: Onex near Geneva, Annecy, Rumilly, &c.

L. lutea has much broader leaves, more like common grass; the leaves and sheaths are quite smooth, without hairs; the panicle of flowers is less divided; the yellowish flowers are smaller and more closely packed together; and there is no long leaf, only a sheath at the base of the panicle. Sunny Alpine pastures: Mer de Glace, Mont Cenis.

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99. Poa.

(*PLATE LVI.*)

It would be too great an undertaking to enter upon the grasses here, a most interesting tribe of plants, which are made out to be more difficult than they really are. We

would recommend those who have not noticed the difference between them when in and out of flower to do so, and they will be surprised at the colours and the beauty of the hanging stamens. We select only two out of the many, neither of them common in England.

P. vivipara (Fig. 99). Flower without awns, panicle rather spreading, with spikelets containing four or five flowers. The spike is very prettily variegated with green and violet, and white or gold, colours. The most remarkable thing about it is that very often the glumes become narrow leaflets, about an inch long, which hang in different directions and give the grass a striking appearance. There are at least three species which especially do this, P. Alpina, P. bulbosa, and P. minor; the last has very fine, hair-like flower-stalks, and Bulbosa has the swollen base of the stems and leaf-stalks increased into bulbs. Not uncommon in Alpine pastures and stony places.

100. Stipa.—Feather-grass.

(*PLATE LV.*)

The Stipa, cultivated in our gardens for the sake of its beautiful awn, a foot or so in length, is well known under the name of Feather-grass, having some resemblance to the plume of the tail of a Bird of Paradise. The Stipas grow in loose panicles of about five or six single flowers, the lower husk of which bears the awn, which is at first very smooth and twisted, but soon becomes feathery. The husk adheres closely to the seed, which is sharply pointed and barbed with bristles at the base; and possibly the long awn may help to float it through the air, as no doubt the barbed point fixes it in the ground.

S. capillata (Fig. 100) is not so pretty a plant as S. pennata of our gardens. It is coarser, and the stalks rise much higher before they flower; they, like those of the other, are covered by the sheath to the top. The leaves are rough, straight, rolled round, and grow in partial whorls. The awns are not so long as in S. pennata, and are more inclined to twist themselves about. Large

bunches may be seen ornamenting the hotels and little inns, often dyed yellow, which does not improve them, their own colour, very light fawn, being much prettier. Dry places, warm hills: Aigle, Ollon (Vaud); La Bâtias, Sion, Sierre (Valais); Pont de la Madeleine, near St. Jean de Maurienne; foot of Görner-Glacier, Zermatt.

SWISS FERNS.

As we have remarked before, it may surprise some to hear that there are very few ferns in Switzerland which we have not in England, and those few are rarely met with. But then, on the other hand, there is an abundance of many of those which are scarce with us, and, like the flowers, they grow with a freedom and a luxuriance which make them seem almost another thing.

We therefore merely give a short notice of the Swiss Ferns, following the arrangement of M. Morthier, leaving fuller details to be gained from the many books on the subject which are published in this country.

Terms used.

Spore, seed.
Sporangia, cases, or capsules, containing the seed.
Sori, the arrangement of these capsules in little clusters on the back of the leaf, or on spikes or panicles separate from it.
Indusium, a thin membrane which sometimes covers the sori when young
Pinna, the primary division on each side the main stalk.
Segment, the division of the pinna.
Frond, the leaf.

1. Botrychium.—Moonwort.

One of the first three families, which have not an elastic ring round the sporangia, or seed-case, and which have their sori in a separate spike or panicle.

B. Lunaria. Barren leaf, from one to three inches long; rises from about the middle of the stem, pinnate with many half-moon or fan-shaped segments, the edge either entire or notched. Panicle of sori in a compound spike. Mountain-pastures: Wengern-Alp, Bernina-Pass in the Engadine.

B. virginianum has the barren frond rising nearer the top of the stem, with the segments smaller at the base; slightly hairy. Near the baths of Serneus, Grisons; rare.

B. matricariæfolium has also its frond rising from above the middle of the stem, with oval or oblong segments, twice three times crenate. Alps: Bernardino. The two last species are not British.

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2. Ophioglossum vulgatum.—Adder's-tongue.

A solitary stem, with a leaf something like a Plantain-leaf, from the base of which rises the fertile spike of seeds about an inch or two high. Moist and cultivated meadows.

3. Osmunda regalis.—Royal Flowering Fern.

Stems from one to ten feet high according to soil, fronds twice pinnate, the capsules being in the form of a compound panicle at the top of the frond. Boggy places: Tessin.

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4. Woodsia hyperborea.

A small fern with fronds from two to six inches long, twice pinnate, on short stems, covered with hairy scales. Segments oval, having more or less of brown chaffy hairs below. Sori mixed with hairs proceeding from the minute indusium. Alps of Valais, Uri, Grisons.

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5. Onoclea struthiopteris.

Barren fronds, oval, lanceolate, with a short point, leathery, with linear-lanceolate segments divided into oblong, blunt, entire, lobes. Moist ground in Tessin. Not British.

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6. Cystopteris.—Bladder-Fern.

A delicate fern, tufted, with oblong-lanceolate pointed and twice or thrice pinnate fronds, sori small, circular.

C. montana. Fronds deltoid, ternate, tripinnate. Lower pinnas larger and more divided than the others. Alps and Jura.

C. Alpina. Fronds almost thrice pinnatifid, with broadly and shortly linear segments partly cloven and toothed at the end. Alps.

C. fragilis. Fronds twice pinnate, the longest pinnas in the middle of the frond from one to two inches long, decreasing towards both ends. Segments oval, oblong, or lanceolate, crenate or toothed. A variable plant. Walls and rocks.

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7. Aspidium.—Shield-Fern.

Fronds once or twice or thrice pinnate. Sori circular, covered by the indusium, which is attached by the centre—plants are then called Lastrea; or by the margin, by a kind of fold which gives it a kidney-shape—plants then called Polystichum. This distinction is often difficult to see. Stems generally scaly, at least at the base.

A. (Polystichum) Lonchitis, Holly-Fern. Fronds in tufts a foot or more high, stiff, leathery, on a short and very scaly foot-stalk, simply pinnate, with entire, curved, segments having thorn-like hairs. Alps and Jura.

A. (Polystichum) lobatum very much resembles the above in some of its forms, and is distinguished by having the lower lobes prolonged into auricles. The fronds are also twice pinnate, and from one to two feet high. Forests.

A. Braunii has soft membranous fronds contracted at the base, lobes of the segments almost sessile, large and strongly veined, prolonged in a blunt auricle. Hasli, Engelberg. Rare, not British.

A. (Lastrea) Thelypteris. Fronds not tufted, pinnate, bright green, one to two feet high; stem slender, without scales; pinnas deeply pinnatifid; lobes triangular, lanceolate; sori in lines on the margin, at last confluent. Turfy bogs.

A. (Lastrea) Oreopteris, or montanum, Sweet Mountain-Fern. Underground root thick and tufting; fronds rising in a circle two to three feet high on short scaly stalks, oblong, lanceolate, and pinnate; lobes quite entire, confluent at the base, sprinkled on the back with resinous glands which give a pleasant fragrance when rubbed. Forests.

A. (Lastrea) Filix-mas, Male Fern. Fronds on stems covered with brown scales, often loose and shaggy, in large

handsome circular tufts, three or more feet high; oblong-elliptic and bi-pinnate lobes blunt, oblong, rather toothed. Forests. One of the most common British Ferns.

A. (Lastrea) rigidum, spinulosum, dilatatum, or cristatum. All these are considered by some to be variations of Filix-mas. A. dilatatum is specially variable, and is very common; its lobes are often furnished with spiny teeth. The frond of A. rigidum is stiffer.

7. Phegopteris, or Polypodium.

Fronds with long stalks rising altogether from six to twelve inches, pinnate, or ternately divided.

P. polypodioides, or Polypodium Phegopteris, Beech-Fern. Fronds oval, lanceolate, and pointed, once pinnate. The two first lobes of each segment are united at the base with the segment opposite. It may always be known from having the lowest pair of leaflets turned down in an opposite direction from the others. It is more or less hairy on the under side. Forests.

P. or Polypodium Dryopteris, Oak-Fern. Fronds ternate, each division twice pinnate, from six inches to a foot high. Plant slender, smooth; segments thin, of a pretty light-green colour, with the sori near the margin. Rocks.

P. Robertiana is a stouter plant, with scaly, glandular meal on the stalk and veins.

Polypodium vulgare, the common Polypody. Fronds from six inches to a foot long, deeply pinnatifid, scaly at the base; segments often connected by their broad base; sori large, yellow, in two rows on the back of the frond at the upper part. Rocks and old trees.

8. Ceterach officinarum.—Scaly Hart's-tongue.

Fronds tufted, from two to ten inches long, leathery, deeply pinnatifid, with rounded, thick, entire, and confluent, segments. Green above, and covered with reddish scales beneath. Rocks and old walls.

9. Scolopendrium vulgare.—Hart's-tongue.

Fronds tufted, undivided, broadly linear, heart-shaped at the base, from half-a-foot to two feet long. Sori arranged in parallel slits at the back of the frond. Shady rocks.

10. Asplenium.—Spleenwort.

Sori linear, straight, parallel, scattered obliquely over the back of the frond.

A. Ruta-muraria. Fronds densely tufted, very small, twice pinnate, with rhomboid stalked segments, the whole having the look of a sprig of Rue. Sori become at last confluent. Walls, rocks.

A. Germanicum, very like the Wall-Rue, but the frond is simply pinnate at the top, bi-pinnate lower down.

A. septentrionale, Forked Spleenwort. Frond two to six inches long, smooth and leathery, consisting of one stalk, which divides near the top into two long linear segments, pointed, and notched at the summit. Granite-rocks.

A. Trichomanes (so-called Maiden-hair, but not the real), a tufted spreading fern. Fronds from two to eight inches long, with black shining stalks, simply pinnate. The segments broadly oblong, dark green, crenate. Walls, rocks.

A. viride is very much like the above, only it has a green stem. Abundant in many rocks of the Jura and the Alps.

A. fontanum, Rock-Spleenwort. Stock thick, tufted; fronds from three to six inches long, bright green, oblong-lanceolate, twice pinnate; segments oval, having deeply-notched lobes with pointed teeth. Rocks: Jura, and Alps.

A. Filix-fœmina, Lady-Fern. A tall fern, from two to

three feet high, which grows in the circular form of the Male Fern, but has a less scaly stalk and different sori. Fronds twice pinnate, the segments with pointed teeth. Forests.

A. Alpestre is a variety of the Lady-Fern with very small lobes.

A. Adiantum-nigrum, Black Spleenwort. Frond from six to twelve inches high, triangular, shining, dark green, twice or thrice pinnate, segments sharply toothed. Warm hills.

11. Blechnum boreale.—Northern Hard Fern.

This is remarkable, and distinguished at first glance, from having two kinds of fronds: the barren, lanceolate, with rather broad segments, which approach each other and are from one to two inches long in the middle, gradually tapering toward each end; the fertile, which rise in the middle of the tuft and have only very narrow linear segments, the under part of which is filled by the sori arranged in two lines. Forests, boggy ground.

12. Pteris.—Brake.

Sori in lines along the edge of the leaflets.

P. aquilina, Brake. A tall fern, from one to ten feet high according to situation, with fronds twice or thrice pinnate, the lower pinnas larger, giving the fern a triangular outline. It is the fern most generally met with in England, growing on commons and waste places. The stem, if cut across a little above the ground, has the appearance of an oak.

P. Cretica. Fronds of two kinds: the barren, with linear-lanceolate segments with pointed teeth; the fertile, with very narrow entire linear segments. Rocks: Tessin. Not found in England.

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13. Adiantum Capillus-Veneris.

True Maiden-Hair. This fern, so well known, is found in Switzerland not much more often than in England. It is mentioned as being on old walls and rocks at Neuchâtel and in Tessin. Everyone knows it. Its much-divided shining dark stems, and the bright green delicate leaflets, which hang tremblingly on their hair-like stalks, make it

easy to be distinguished. The leaflets are wedge-shaped, lobed, with numerous veins meeting at the base; they have the sori at the edge of the lobes on the under side.

14. Cheilanthes fragrans.

is allied to Adiantum; it is tri-pinnate, with pinnated segments and oblong-round entire lobes, with a smooth foot-stalk longer than the limb. Fragile; old walls. Not British, and perhaps a doubtful native of Switzerland.

15. Allosorus crispus, Pteris crispa (Cryptogramma).—Parsley-Fern.

Fronds from six to twelve inches high, twice pinnate, on slender stalks: the barren, resembling Parsley-leaves with small egg-shaped, cut, or deeply-crenate, segments; the fertile thrice pinnate with thin linear segments, from having their membranous edges turned down over the sori. Granite Alpine rocks, growing to a fine size and often abundantly: Gemmi-Pass.

16. Gymnogramma marantæ.

Fronds lanceolate bi-pinnate, segments opposite, lanceolate-pinnate, with blunt entire lobes, covered beneath with brown scales. Rocks and old walls: Tessin. The same family as the gold and silver ferns of our hot-houses.

Plants mentioned in this Book, according to the Linnæan Arrangement.

(The numbers refer to the Plates.)

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Diandria.

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Hexandria.

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ADDENDUM.

The suggestion made in the Introduction that Alpine flowers should not be ruthlessly gathered is shown not to be needless by the last Report of an Association, formed in Geneva about four years ago, for the protection of Swiss plants—a society to which the annual subscription is only two francs, and which well deserves the support of all lovers of the beautiful flowers it seeks to guard.

It is high time that something were done, or the rarer species will entirely disappear, and those now common will become rare. The markets of Geneva, Lausanne, and Vevey, receive once or twice a week enormous quantities of plants from the surrounding and even more distant mountains, many of them not only gathered but *taken up by the roots*; and this is one thing to which the Association particularly wishes to call attention and hopes greatly to check.

Then, collectors are sent out from large foreign horticultural houses, who know what is most beautiful and

most rare, and do not scruple to get as much of it as they possibly can.

The societies for exchanges carried out in the following manner have, too, a very fatal effect. It is scarcely to be wondered at that the Report speaks of it as enough to make the hair stand on end to read a list of some of the plants demanded: among the rest, Papaver Alpinum, as many as possible, entire plants, in bud and in fruit; Dianthus cæsius, fifty large tufts; Cheiranthus Cheiri, twenty large specimens; and Arabis arenosa, as many as possible—these two being rare; as many as possible of Pyrola minor; and one hundred good specimens, with roots, of Inula Vaillantii. What flora could stand against this, when, in addition, cart-loads of the commoner kinds were required?

Botanists, also, would do well to be cautious to whom they show the rarest plants and mention the localities where they are found. And surely botanists should be the last persons to need the request that they would content themselves with a specimen or two when they find anything rare, and thus leave to others a share of the pleasure they have so much enjoyed. From the mountain-pastures, so abundantly adorned and coloured by their flowery treasures, there can be no harm in picking a posy to adorn the hat or a bouquet to garnish the *table-d'hôte*. But the cases should be rare where the plant is taken up root and all; else the

day may come when the mountains will be as bare of their flowers as some of them are of the pines which once crowned them.

To remedy the present state of things, the above-mentioned Association seeks to form a public opinion with regard to the protection of Swiss plants ; to call in legal intervention if necessary; to forbid their being taken from certain localities; and to prevent their being sent out of the country in huge packages ; also to encourage the cultivation of Alpine plants by raising them in large quantities by means of seeds and careful cultivation, that so a new trade may spring up to rival that of the poor withered roots found in the markets, and producing a much more satisfactory result to the purchaser.

The office of the Association is at 8, Rue du Mont Blanc, Genève, where Mons. Louis Lang will give all required information.

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